MACTEC

May 6, 2005

Ms. Almerinda Silva
United States Environmental Protection Agency
Region I
1 Congress Street
Suite 1100 (HBT)
Boston, MA 02114-2023

RE: Combustible Gas Comprehensive Summary Report
Old Southington Landfill Superfund Project

Dear Ms. Silva:

This letter provides, on behalf of United Technologies Corporation, Pratt & Whitney and the Town of Southington (the "Performing Settling Defendants" (PSDs)), a comprehensive summary of combustible gas monitoring at the Old Southington Landfill. The results of gas monitoring activities since 1995 confirm that: 1) the Old Southington Landfill ("Landfill") is not generating significant amounts of gases and those gases that are generated are not migrating; and 2) gases detected north of the Landfill are due to naturally occurring peat deposits. Accordingly, the PSDs request that the U.S. Environmental Protection Agency – Region I (EPA) approve the discontinuation of gas monitoring activities north of the Site.

HISTORICAL SUMMARY

The PSDs have been measuring combustible gas in probes along and north of Rejean Road since they were first installed in December 1994. Initially, 28 permanent probes (designated PMP) and 9 temporary probes were installed and measured, as directed by EPA, Agency for Toxic Substance and Disease Registry (ATSDR), and the Connecticut Department of Environmental Protection (CT DEP), for combustible gas (%LEL) and organic vapor. The installation details and initial monitoring procedures and results of the probes were provided to the Agencies in a report titled "Technical Memorandum on Soil Gas Sampling", Loureiro Engineering Associates (LEA), January 1995. Since 1995, the probes have been measured monthly and reports provided to the Agencies. During this period, the monitoring techniques have evolved to meet the Agencies' requirements.

Starting in 1996, annual reports have been provided to the Agencies summarizing the previous calendar year's measurement results. In addition to the monthly reports and annual summaries, evaluations have been provided to the Agencies, as follows:

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1996 Annual Report and Technical Memorandum on Supplemental Soil Gas Sampling – May 1997 – In addition to providing the summary of calendar year 1995 measurements, the 1996 Annual Report, prepared by LEA, provided an evaluation of the probable source of the erratic, positive combustible gas measurements. The technical memorandum concluded that the source of combustible gases is naturally occurring methane generated in underlying wetland deposits, not Landfill materials, for the following reasons:

- Erratic distribution of combustible gas detection;
- Absence of consistent or identifiable pattern of positive measurements relative to locations;
- Similarity in measurements between background locations and locations closer to the Site along the northern side of Rejean Road and the intersection of Rejean Road and Amanda Lane;
- Similarity in measurements between background locations and locations closest to the northern limit of the Site;
- Close correlation between location of combustible gas measurements and filled wetlands; and
- The presence of a thin unsaturated zone and permeable soils under the northern portion of the Site, effectively minimizing the potential for horizontal advection or diffusion of gases through the unsaturated zone.

Evaluation of Combustible Gas Measurements and Recommendations for Future Work – November 23, 1999 – Pursuant to discussions relating to the completion of the cap design and appropriate post-cap measurements for combustible gas data collection, MACTEC (as ESE) submitted a comprehensive evaluation of all combustible gas measurements taken at the Site and north of Rejean Road. This evaluation summarized: 1) measurements taken north of the Site between January 1995 and July 1999; 2) EPA air studies conducted in 1990, 1991, 1992, and 1993; 3) soil gas program conducted by MACTEC (as ESE) in 1992; and 4) results of measurements in on-site buildings, taken since 1992.

The November 1999 evaluation also discussed the ongoing problems associated with the aging probes. The probes installed north of the Site were designed in conformance with design specifications from the Agencies, in particular ATSDR. Unfortunately, in this particular instance, the natural conditions in the area were not well suited for that design. The probes were designed to sit very near the water table and to have short screen lengths. Over the course of almost five years, the condition of the probes had deteriorated due to fluctuations in the water table that resulted in silting of some screens and flooding of some probes during periods of higher water table. This had resulted in difficulties in collecting data at some locations during some sampling events. Some probes faired worse than others. Therefore, the first part of the evaluation dealt with the number of valid data points collected from each probe and concluded that valid data was still being collected from 19 of the 28 probes.

The evaluation concluded that the data identified a consistent pattern of combustible gas being present in the southern portion of the Landfill, but being largely absent from the northern portion of the Landfill, and that there was no evidence of combustible gas migration moving north from the southern portion. The evaluation made the following recommendations:

- Install new combustible gas monitoring probes consistent with the probes designed to perform the operation and maintenance requirements in the 95% RDRA Design, adjacent to the original probes to determine the comparability of the data from the new probes to the old probes. The new design probes would be installed prior to RDRA activities to establish a pre-cap baseline. Monitoring of all the probe locations monthly between installation and the placement of the cap;

- Discontinue monitoring of original-designed probes located along and north of Rejean Road; and
- Abandon and plug existing probes located along and north of Rejean Road.

Update to November 1999 Evaluation of Combustible Gas Measurements North of Rejean Road – August 17, 2000 – The November 1999 evaluation was updated by MACTEC in the report, to include all combustible gas data collected from probes along and north of Rejean Road from January 1995 through August 2000. In a letter dated March 3, 2000, the PSDs had proposed a scope of work for further combustible gas monitoring north of the Site which was consistent with the above recommendations. EPA provided comments on the scope of future combustible gas monitoring north of the Site in a letter dated May 21, 2000. Subsequently, the PSDs and the Agencies discussed future combustible gas monitoring along and north of Rejean Road at a site meeting on June 7, 2000. As a result, EPA and CT DEP agreed to the design for new monitoring probes and made recommendations on the number of new probes and their locations.

The August 2000 report provided detail on the locations and design of seven new probes (NP-1 through NP-7) and recommended continued monitoring of the adjacent 4 existing probes (PMP-30, PMP-20, PMP-13, and PMP-31) for a period of time necessary to establish a correlation between readings from new and existing probes.

Historic Data Summary Evaluation of Combustible Gas Measurements North of Rejean Road – March 8, 2002 – This evaluation by MACTEC (as Harding ESE) provided an update of combustible gas measurements for the period from January 1995 through December 2001. The evaluation concluded that the combustible gas data collected from January 1995 through December 2001 have:

- Confirmed conclusions presented during the Remedial Investigation (RI) that combustible gases are not being generated, due to the age of the Landfill, in significant quantities or at sufficient pressure to create horizontal migration. The RI relied upon significant soil gas investigations throughout the Landfill; and
- Confirmed that the presence of buried wetlands and peat deposits beneath the northern portion of the Landfill and beneath much of the area along and north of Rejean Road results in occurrences of measurable combustible gas throughout the area overlying the peat and buried wetlands. As expected, these wetland and peat deposits correlate closely with the location of former wetlands, as determined by boring logs and historical aerial photographs.

These conclusions were further supported by the gas measurements being collected in the operation and maintenance (O&M) required Gas Probes (GP-1 through GP-10) surrounding the Landfill, installed for the purpose of determining Cap Effectiveness. Of the nine probes installed1, only probes installed in areas underlain by peat or wetland deposits indicated the presence of combustible gases. These were gas probe numbers GP-3, 4, 5, and 6. Notably, and consistent with previous determinations, gas probes GP-1, 2, and 7, which are located immediately adjacent to the Landfill and are not underlain by peat or wetland deposits, had no combustible gases detected, demonstrating the lack of horizontal migration of combustible gases. The data from the O&M probes are consistent with all previously collected data.

1 GP-8 was initially intended for placement behind the Solomon Casket Company. Once the cap was extended over the Solomon Casket Company property, the probe location was eliminated.

The evaluation included the following recommendations:

- Decommission original probes (the PMP series);
- Continue to monitor probes NP-1 through NP-7 on a monthly basis through September 2002, providing a full two years of data since the installation of the cap;
- Submit a final annual report following the September 2002 sampling event; and
- Discontinue the monitoring program and decommission the NP series probes, assuming the year 2002 data is consistent with previous data.

Annual Report – Calendar Year 2002 – Combustible Gas Monitoring North of Study Site – January 23, 2003

This report provided the combustible gas monitoring results for calendar year 2002 and provided a historical summary similar to that provided above. All of the reports discussed above and summarized in the 2002 Annual Report were included as appendices. The data collected during calendar year 2002 were consistent with the data collected in previous years and clearly showed that the presence of combustible gases is the result of buried wetlands and peat deposits.

The report concluded that based on the eight years of data collected, the measurements of combustible gas were consistent from month to month and year to year. The data collected from the newer NP series probes closely correlated with previous data collected over the past eight years from PMP probes in the same location. The conclusions reached in previous reports, linking combustible gas measurements in the area north of the Site to naturally occurring methane generation from peat and buried wetland soils, were further confirmed by the 2002 data.

Having completed another full year of gas monitoring, going beyond the previously recommended September 2002 date, and given that the collected data were consistent with all the data collected since 1995, showing no change in gas measurements resulting from the installation of the cap, the PSDs proposed that upon the approval of the report by EPA, further gas monitoring activities north of Rejean Road be ended and all gas monitoring probes decommissioned.

ASSESSMENT OF COMBUSTIBLE GAS MONITORING RESULTS

The calendar year 2003 and 2004 measurements were obtained as described in the 1996 Annual Report and Technical Memorandum on Supplemental Soil Gas Sampling, submitted to US EPA in May 1997. The monthly measurements included: combustible gas as % LEL, using a combustible gas detector; oxygen; volatile organic compounds (VOC), using a photoionization detector (PID); and pressure, using a differential pressure gauge.

During calendar years 2003 and 2004, the PSDs continued to try to get measurements from all 35 probes (PMP- and NP-) installed north of the Site. As reported previously, due to the design and age of the PMP probes, measurements can not be taken from many of the PMP probes and many times. Additionally, since January 2002 the PSDs have also monitored nine (9) gas probes (GP-) around the perimeter of the Landfill. Figure 1 shows the location of all of the 44 gas monitoring probes.

Also shown on Figure 1 is the extent of peat deposits as determined during the Remedial Investigation Report. Additionally, areas of historic wetlands are delineated on Figure 1, as determined from historical aerial photographs. Maximum % LEL data are presented graphically in Appendix A for all 44 probes.

The data collected during the past 10 years consistently show that the presence of combustible gases is the result of buried wetlands and peat deposits. The probes that have had multiple combustible gas measurements above 20% LEL are: PMP-6, PMP-10, PMP-14, PMP-20, PMP-22, PMP-25, PMP-30, NP-1, NP-2, NP-3, NP-4, NP-6, GP-3, GP-4, GP-5, and GP-6. As can be seen on Figure 1, al of these probes are located within areas where naturally occurring peat deposits are present or are in areas that were wetlands prior to development. Because peat is formed in wetland environments, these historic wetland areas typically have subsurface peat present even after development and fill cover. Combustible gas (methane) is naturally produced in peat deposits.

PROGRAM CONCLUSIONS

Combustible gas measurements have been collected for 10 years. Over that time period, data are consistent in showing no pattern of combustible gas migration from the Landfill. Likewise, the data are consistent in showing a correlation between naturally occurring combustible gas from peat deposits and the locations where probes have consistently had repeated measurements exceeding 20% LEL. A majority of the probes have outlasted their usable life and no longer provide usable measurement data. Further, there are continuing measurement requirements pursuant to the Operations and Maintenance Plan (O&M Plan) to ensure the effectiveness of the cap and landfill gas controls.

For all of those reasons, the monitoring of combustible gas north of the Landfill no longer provides useful information, does nothing to protect the environment or human health, and is, therefore, no longer necessary. Effective July 1, 2005, the PSDs will cease collecting combustible gas measurements from the PMP and NP probes. Further, the PSDs will begin plans to decommission and/or remove these probes. Combustible gas monitoring associated with the Landfill Cap O&M Plan will continue as outlined in the O&M Plan.

If you have questions or need additional information, please contact me.

Thank you.

Respectfully submitted,
MACTEC Engineering and Consulting, Inc.

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Associate Vice President
Senior Principal Scientist

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OLD SOUTHINGTON LANDFILL SUPERFUND SITE
SOUTHINGTON, CONNECTICUT
2005 COMBUSTIBLE GAS REPORT

FIGURE 1
COMBUSTIBLE GAS MONITORING LOCATIONS
WITH PEAT AND WETLANDS EXTENTS

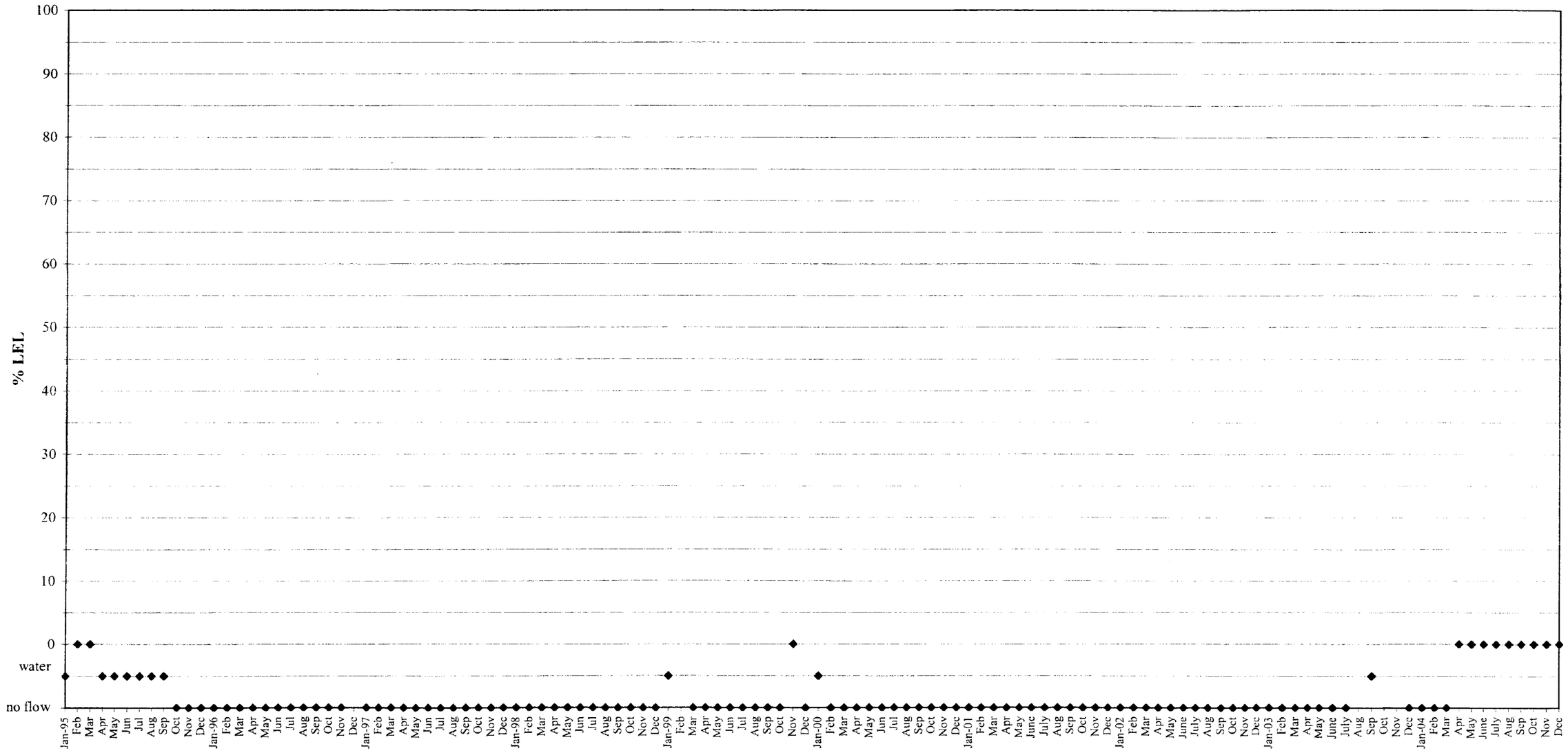
DRAWING NAME: ALL LOCATIONS.DWG			FILE NUMBER: 717561	
SCALE: 1"=250'	REVISION: 0	DRAWN BY: CBG	CHK'D BY: WGW	DATE: 4/8/05

LEGEND

- GZ-1 MONITORING WELL
- PMP-18 PERMANENT METHANE PROBES – JANUARY 1995
- NP-6 NEW METHANE PROBES – OCTOBER 2000
- GP-7 O&M PLAN GAS PROBES – JANUARY 2002
- ESTIMATED EXTENT OF PEAT – RI, 1993
- HISTORIC WETLAND BOUNDARY – AERIAL PHOTOS

Appendix A

PMP-1



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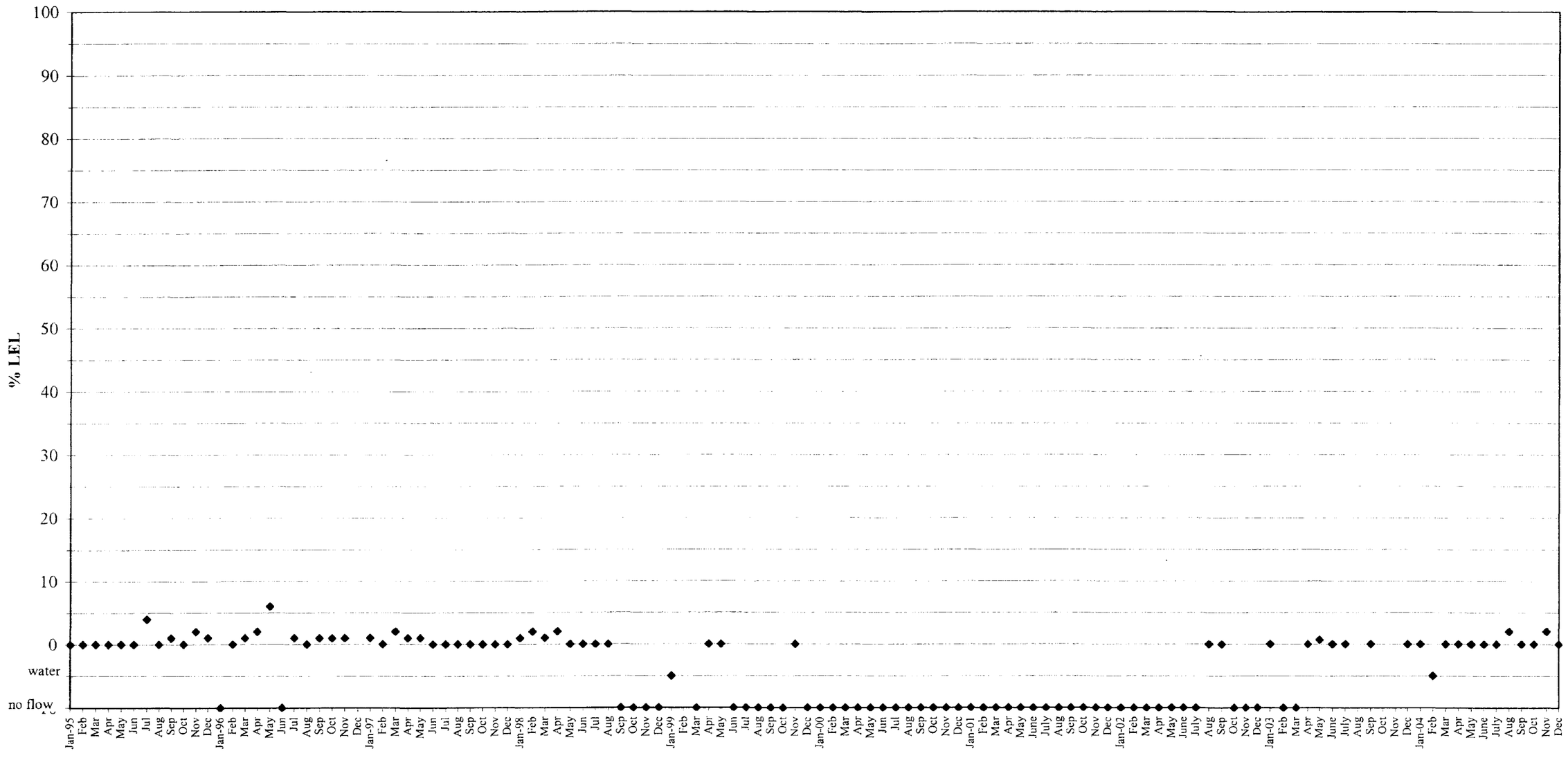
PMP-2



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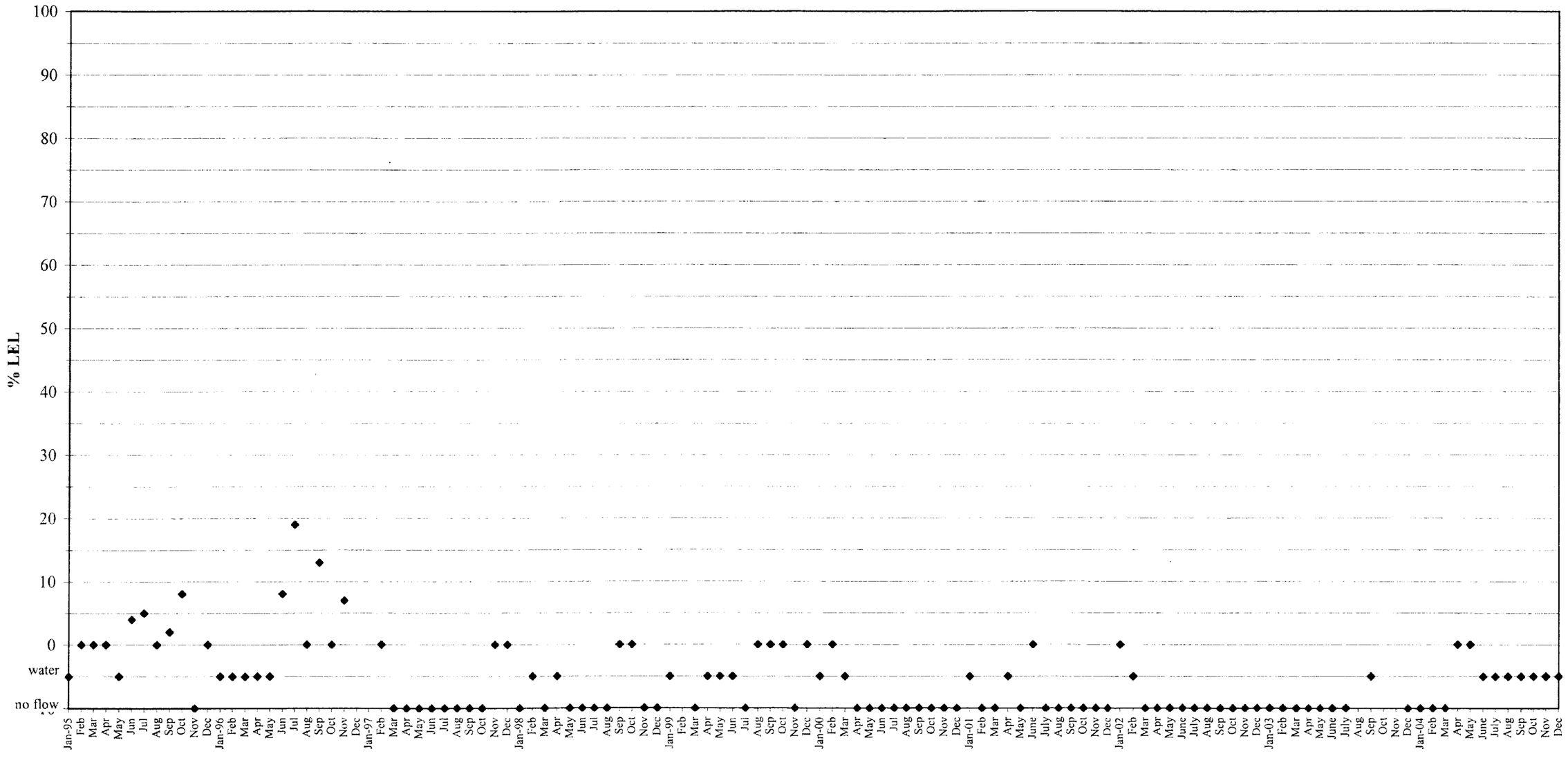

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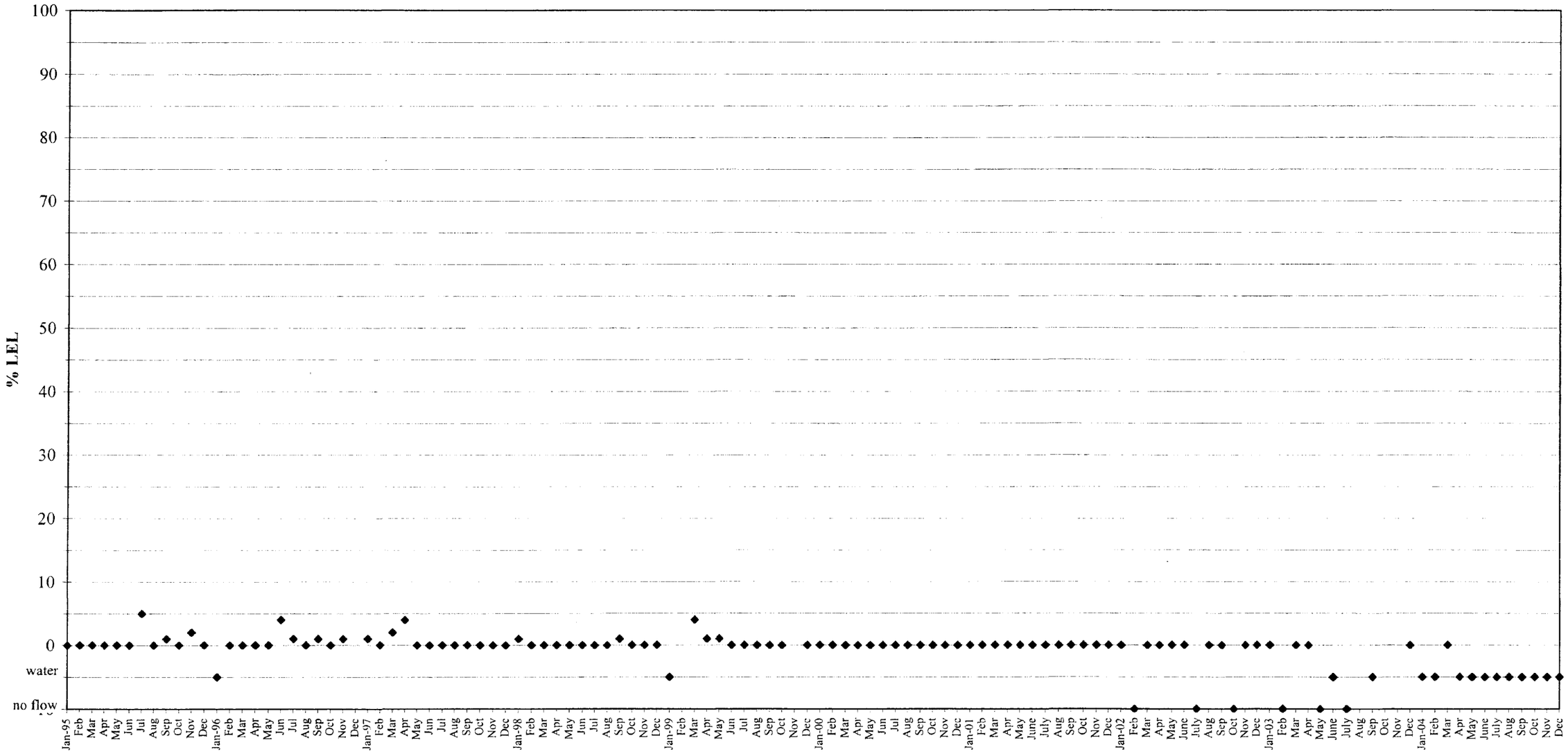

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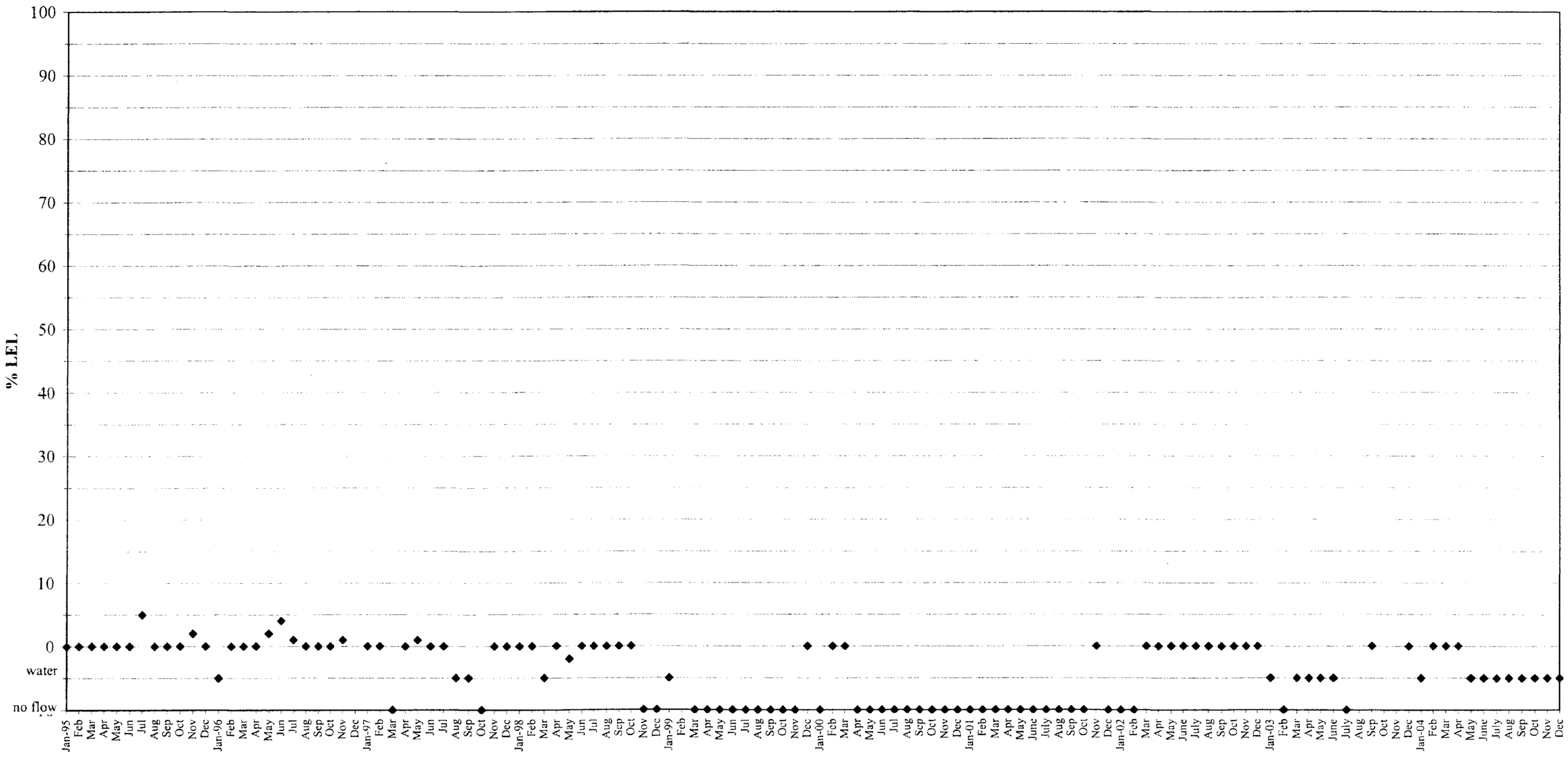

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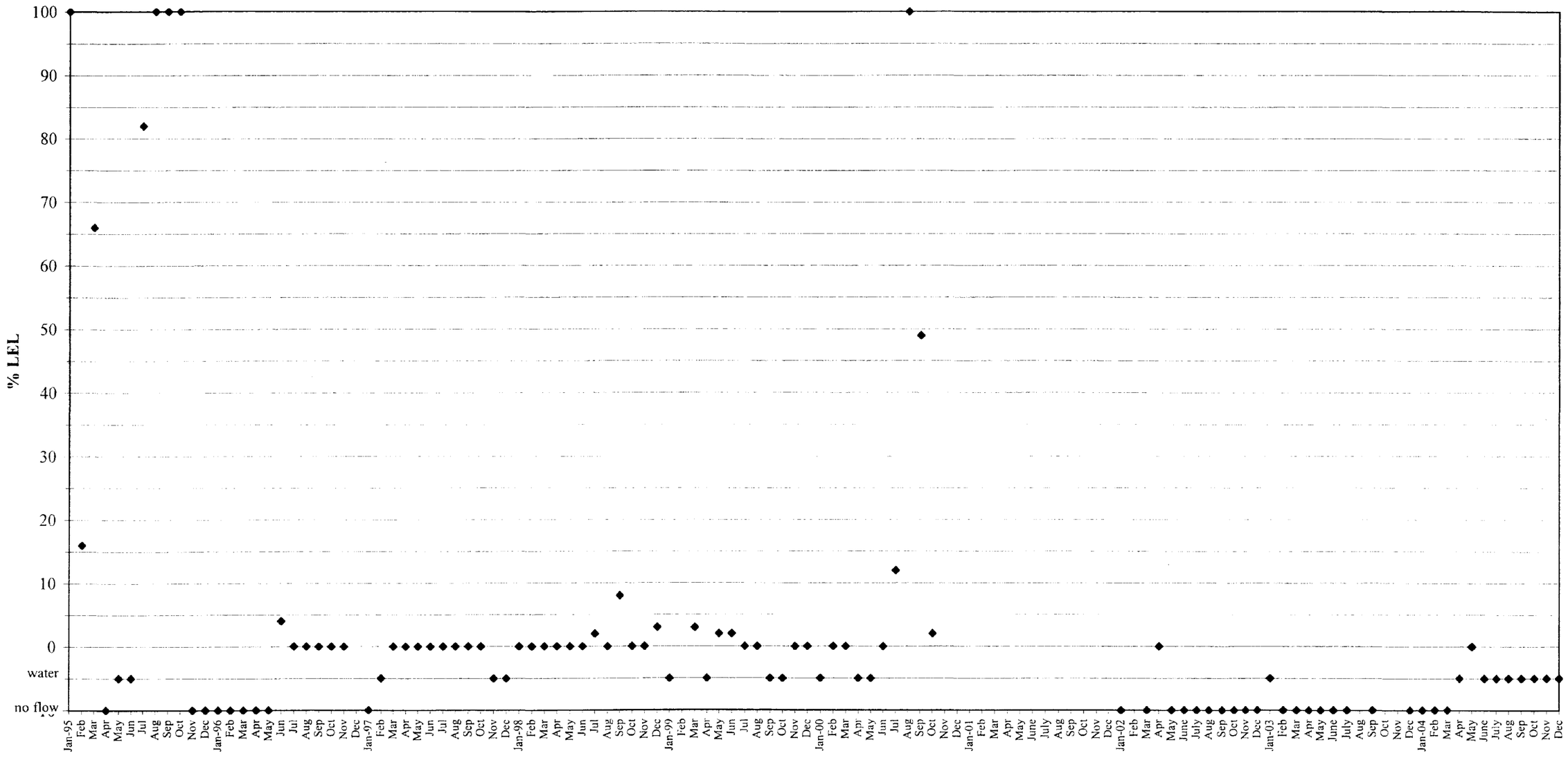

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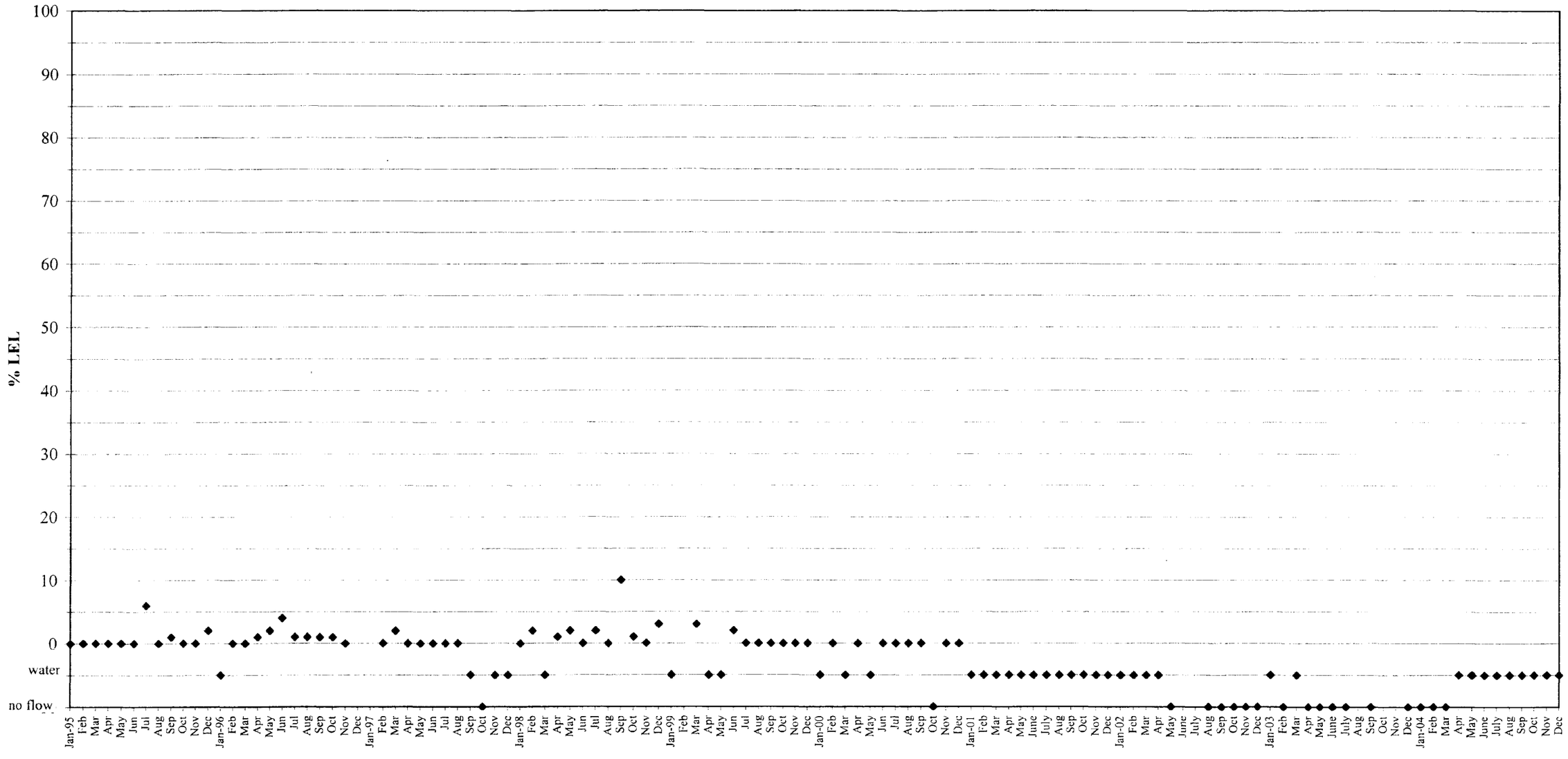

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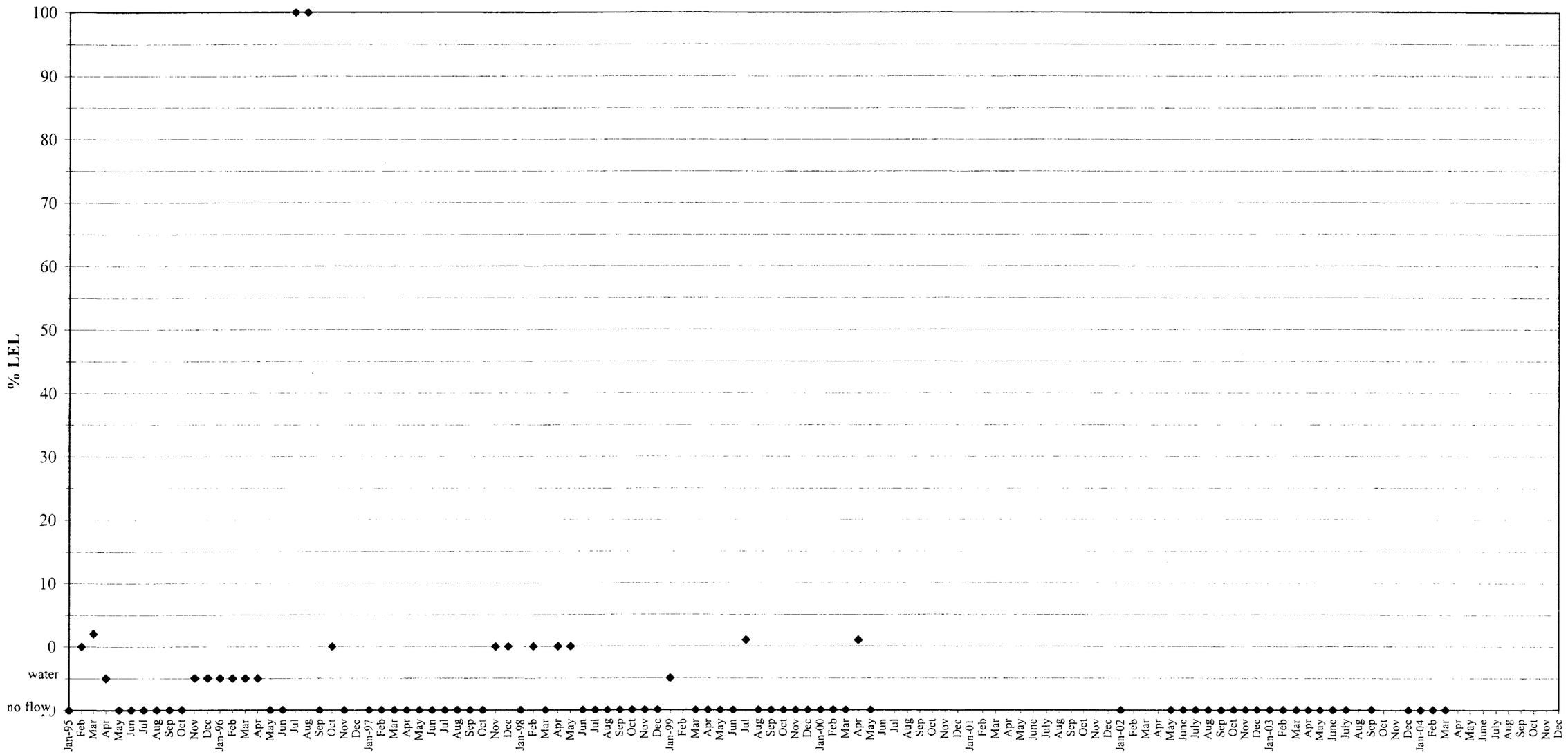

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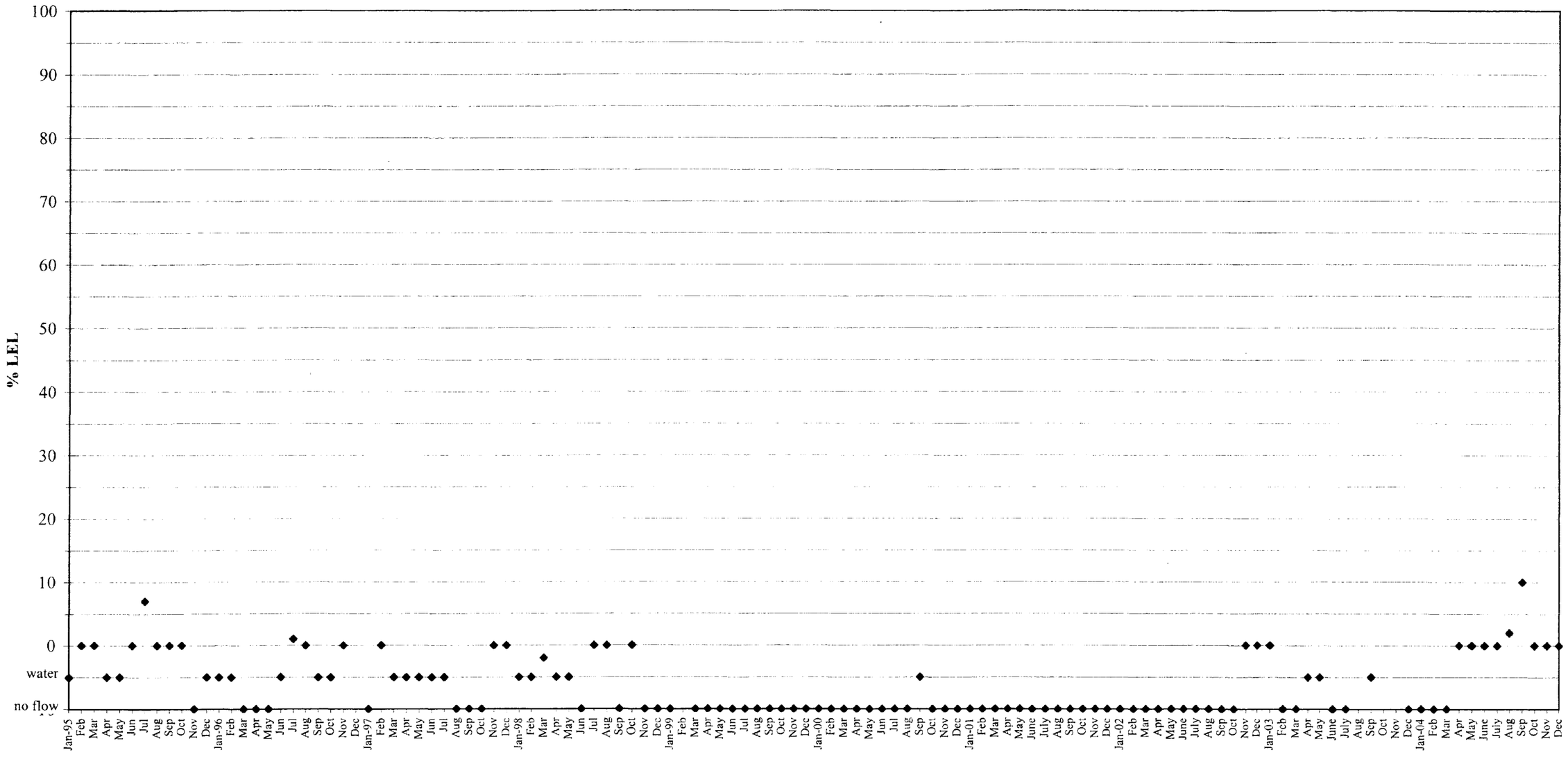

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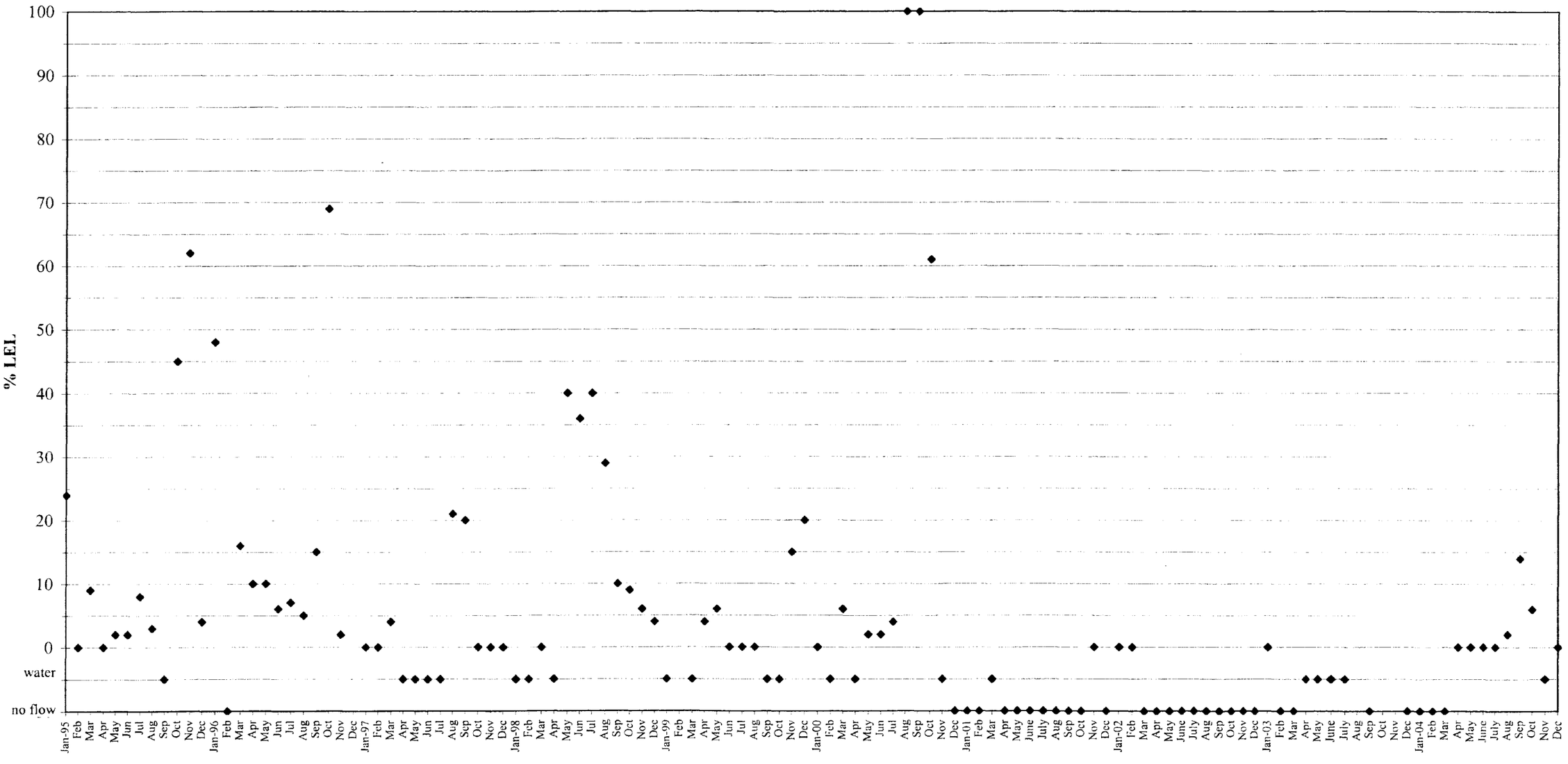

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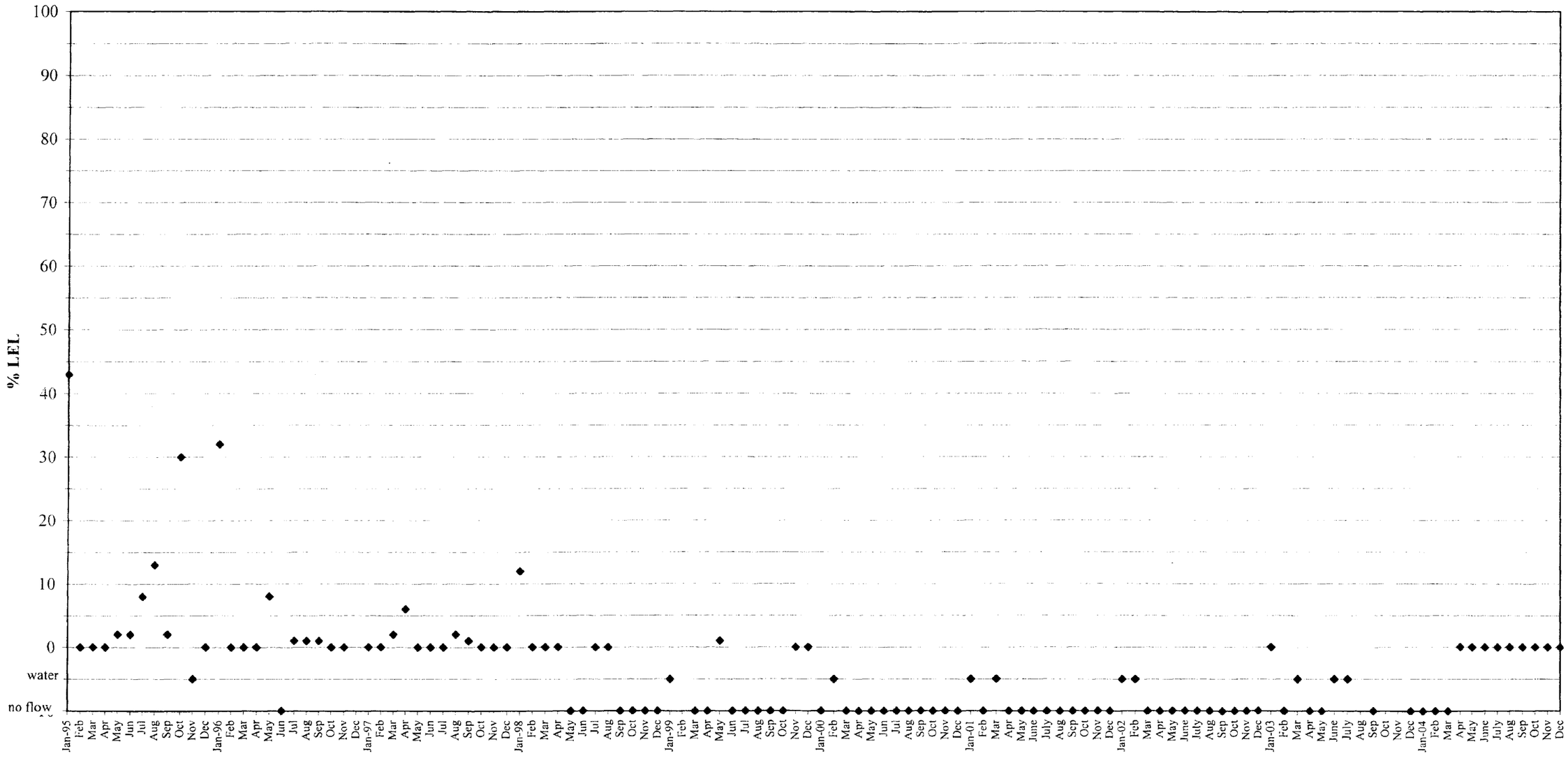
PMP - 11



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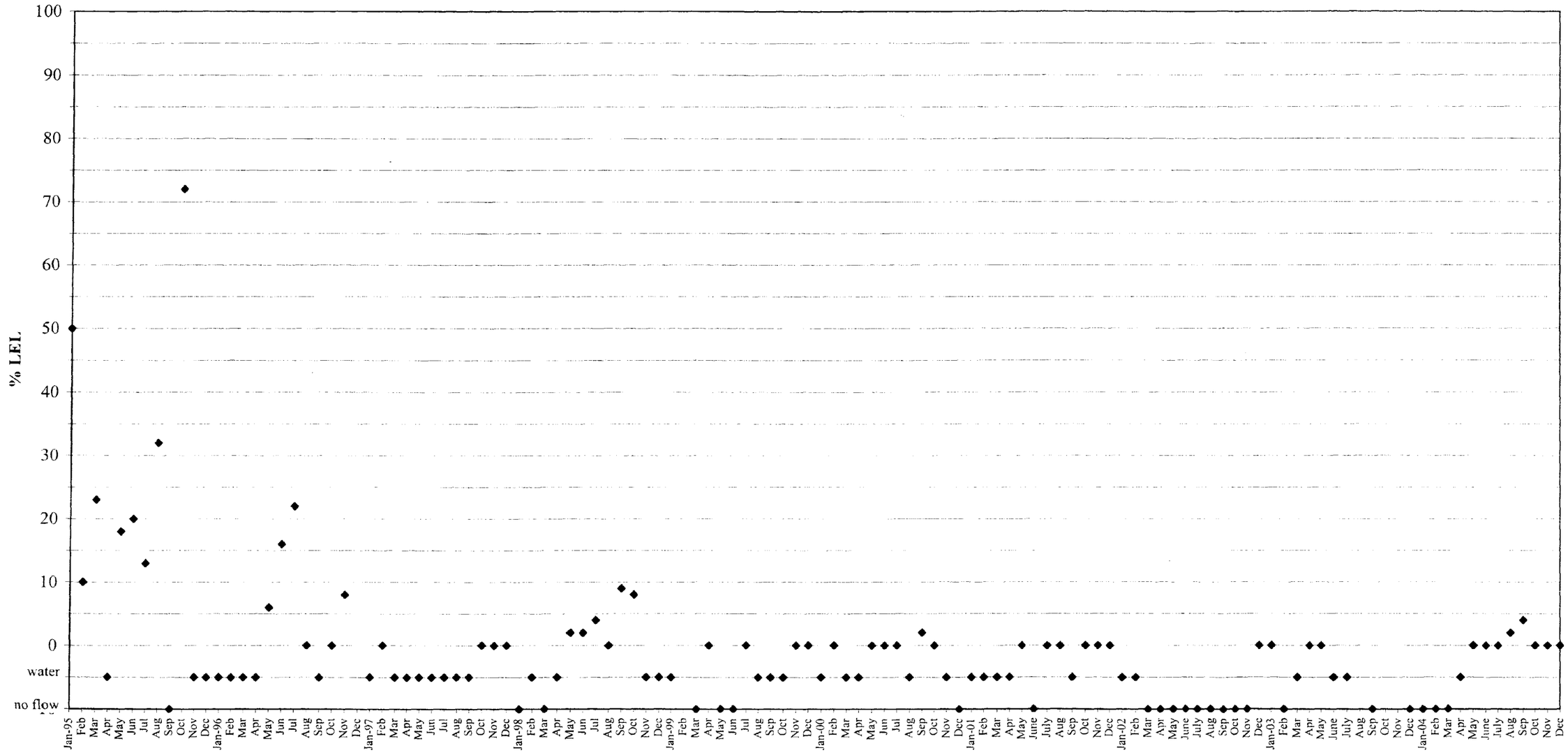

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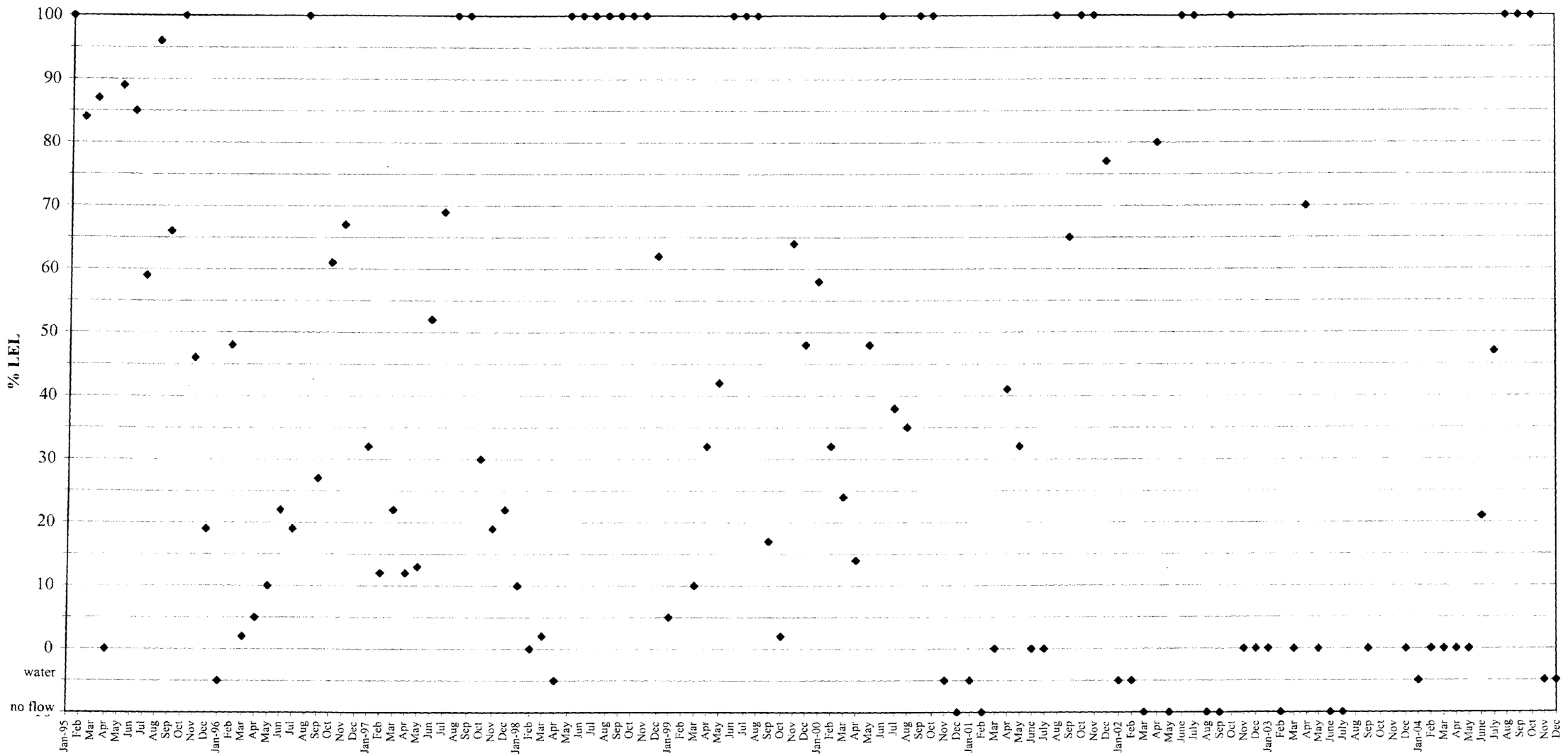

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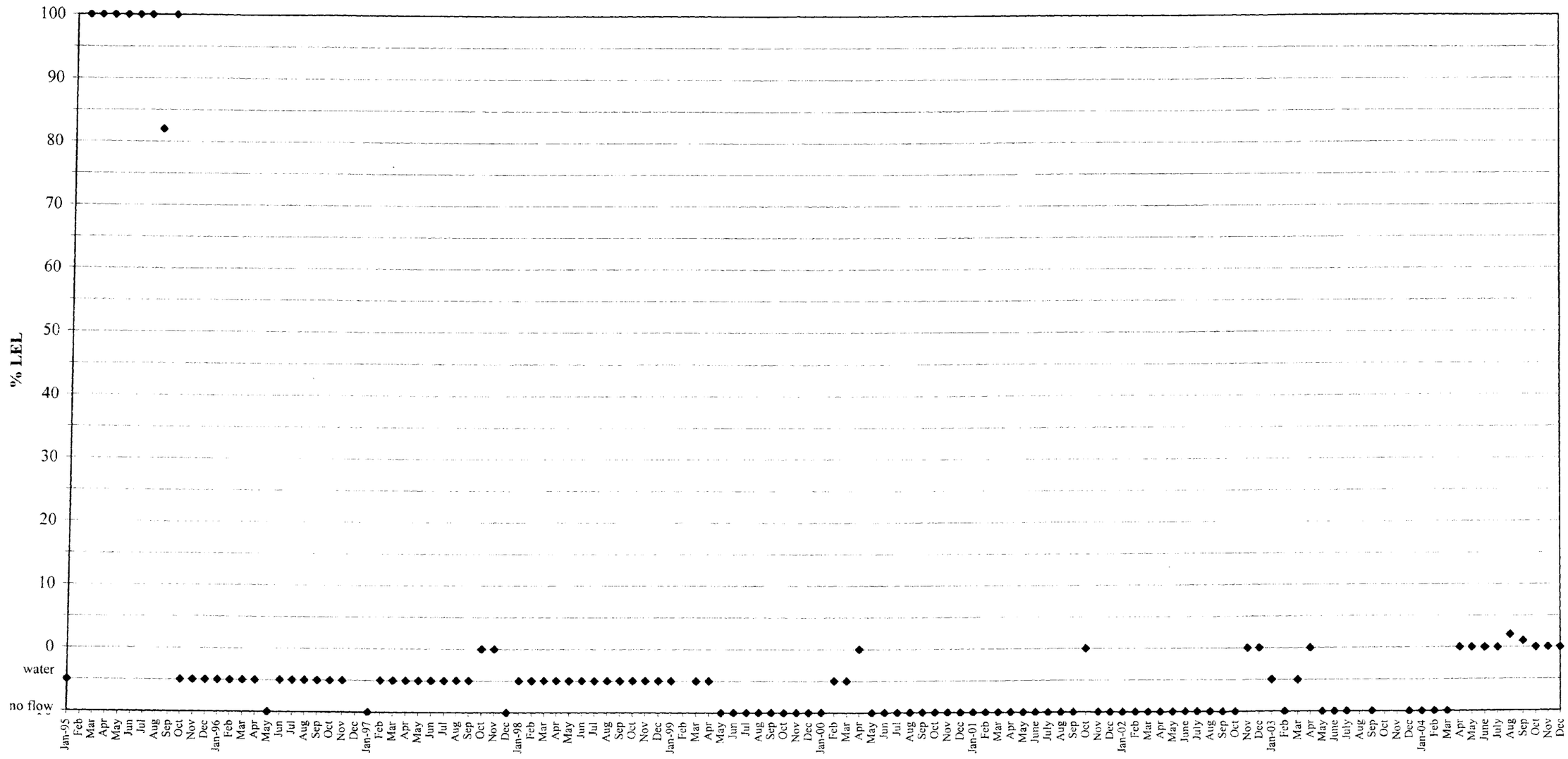

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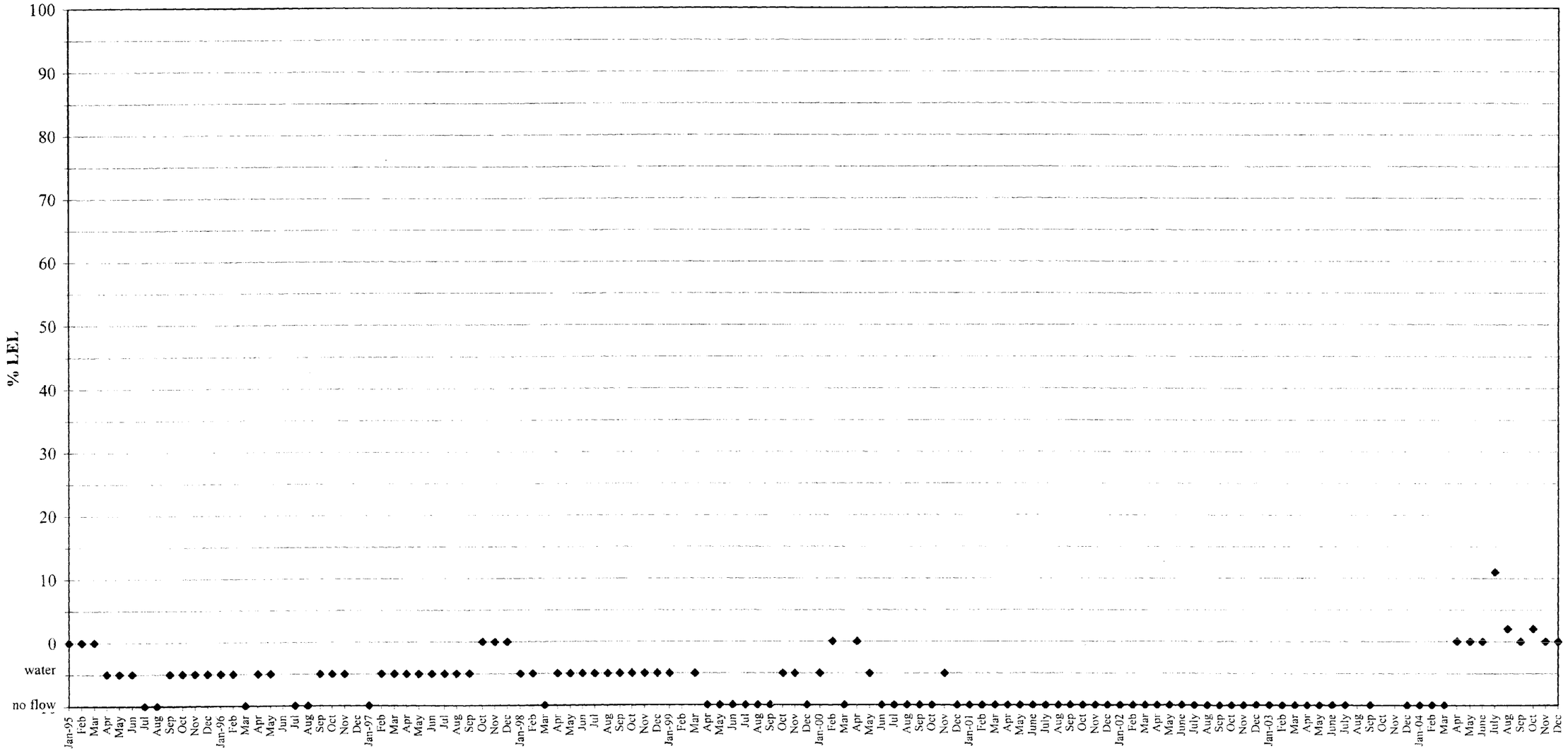

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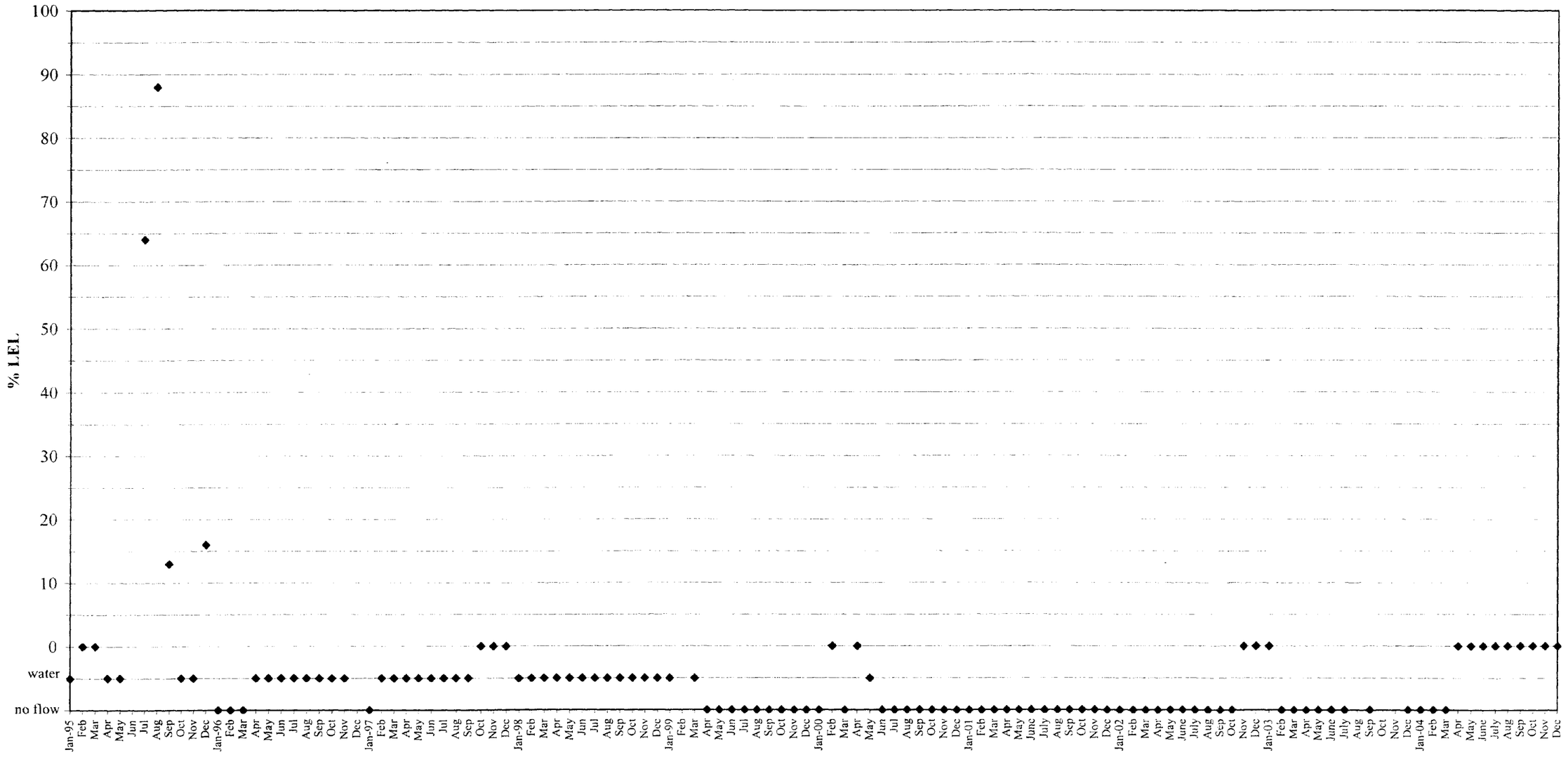

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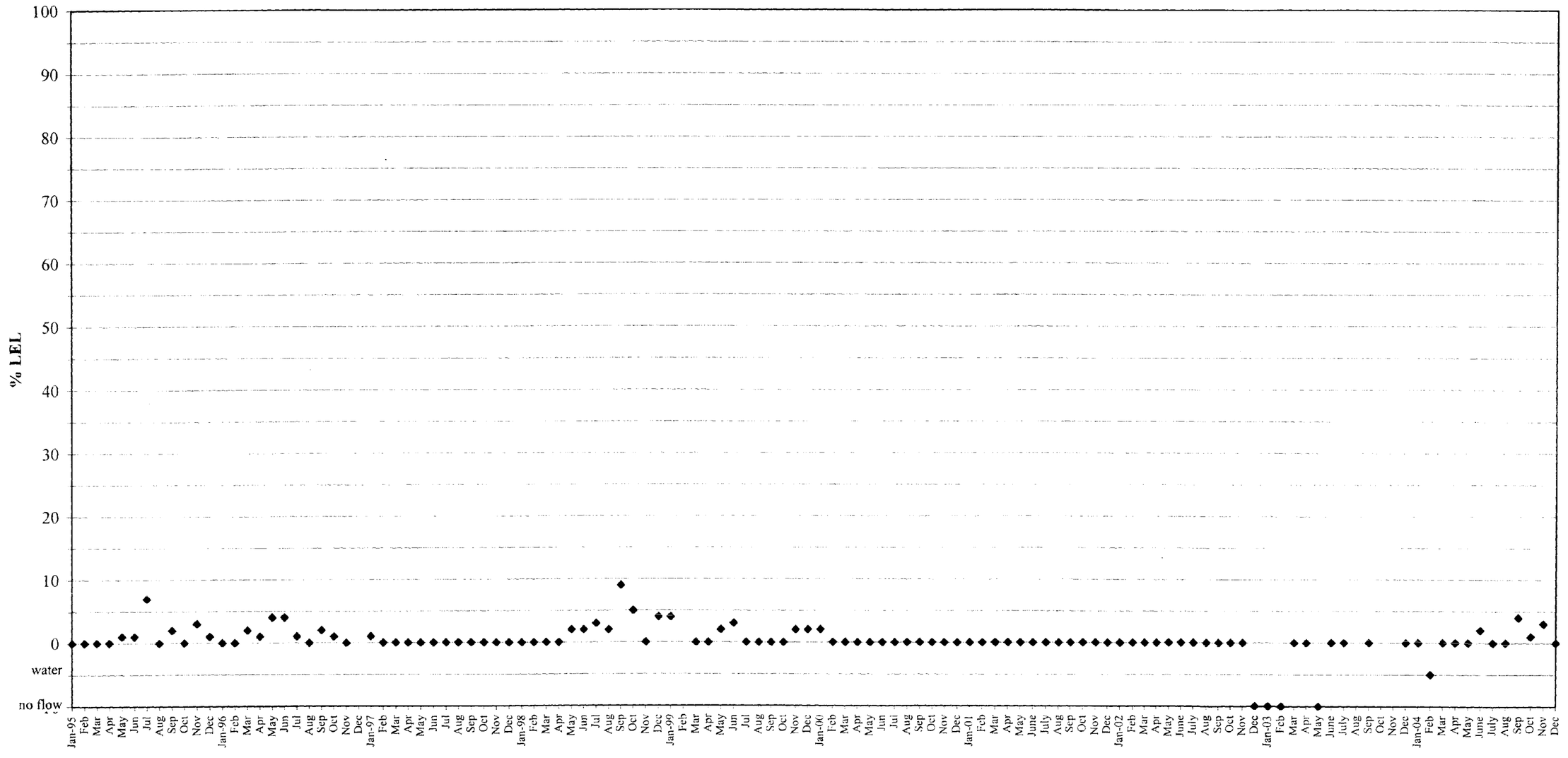

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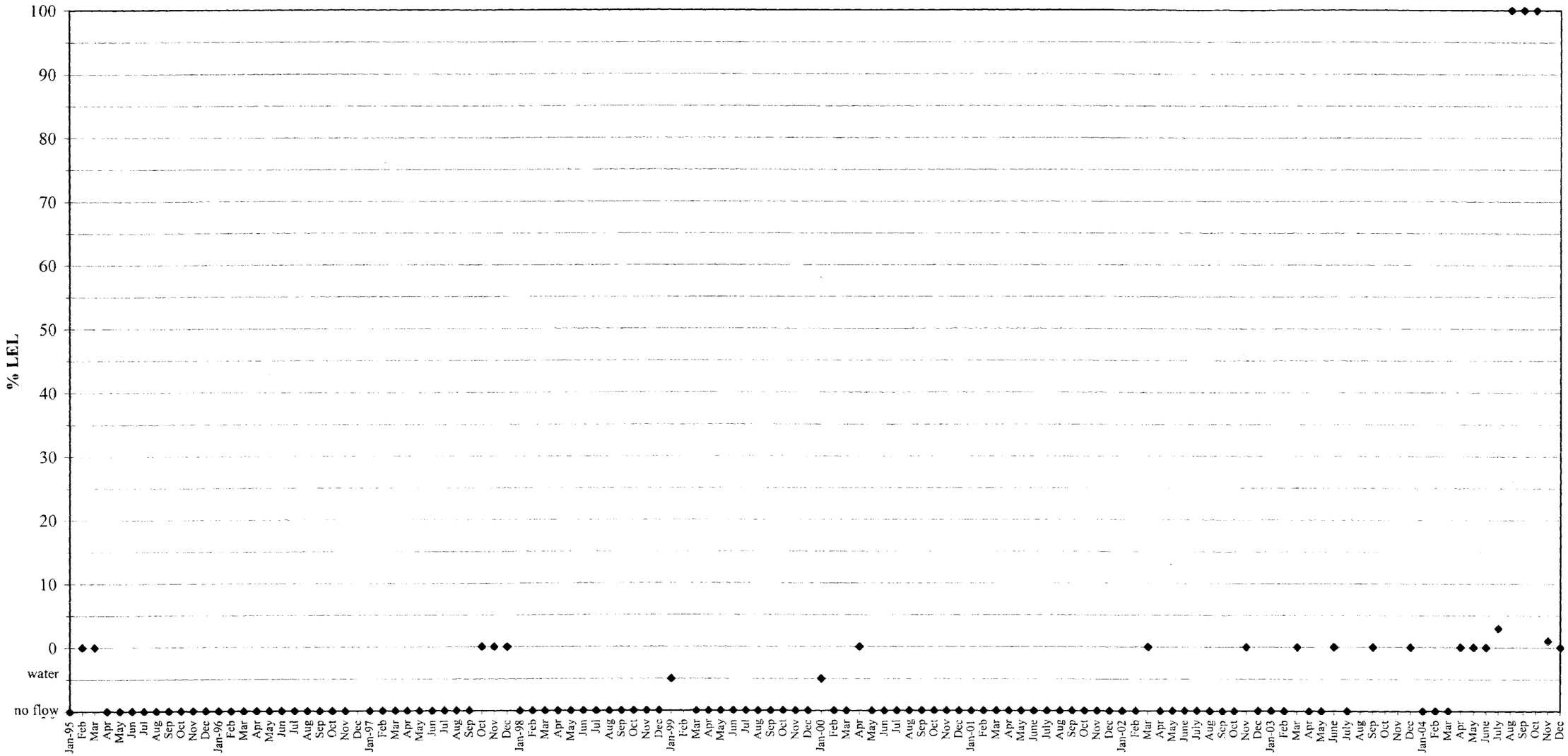

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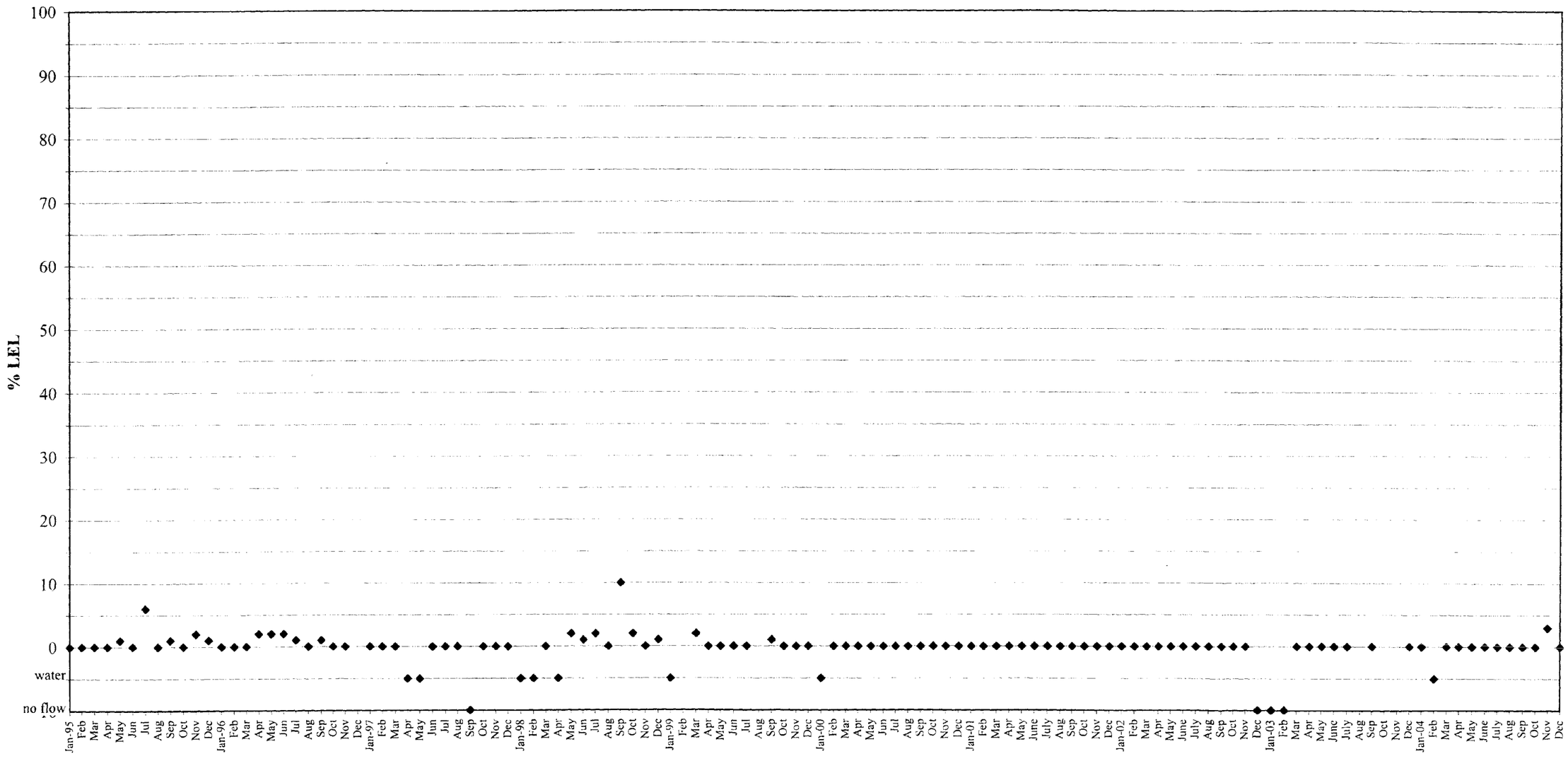

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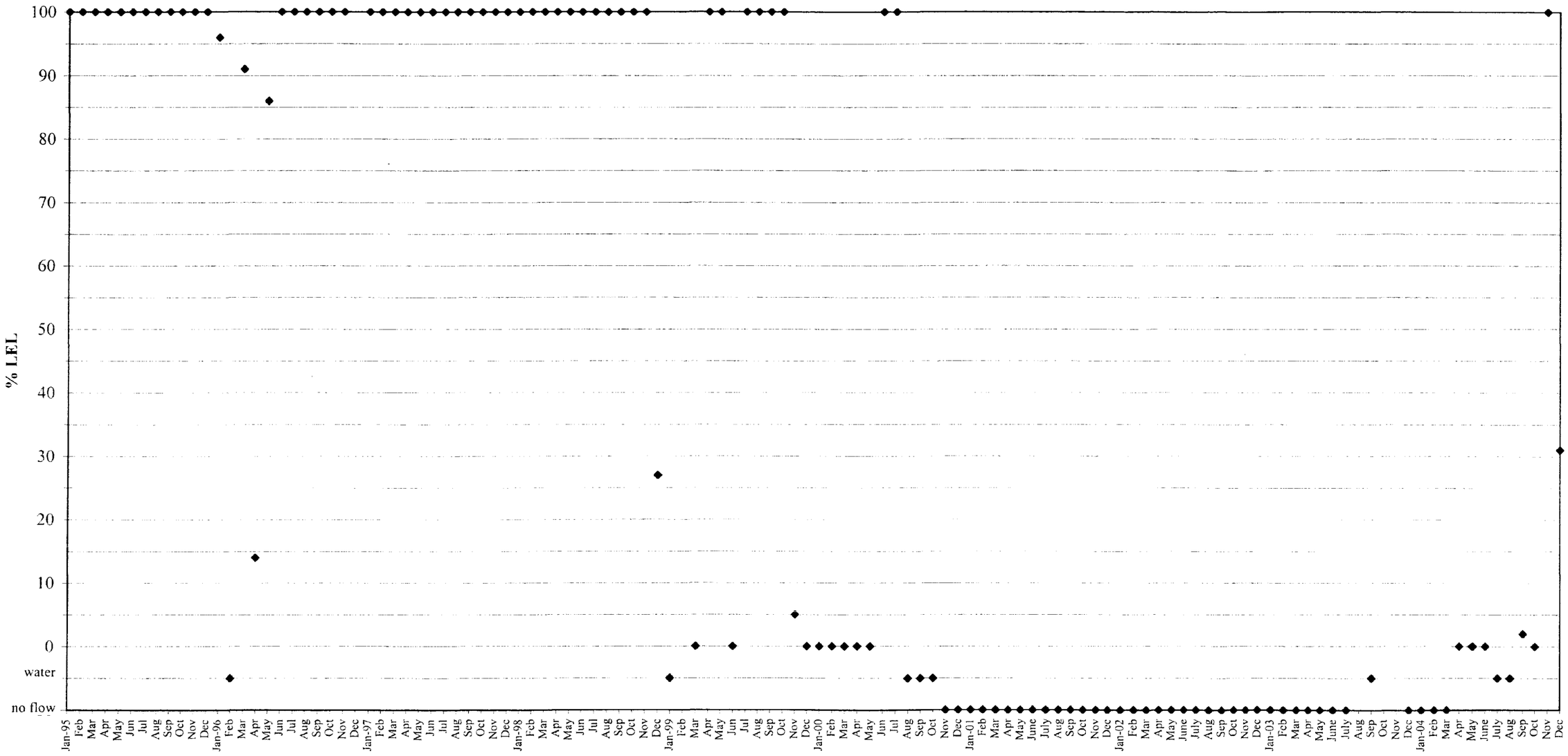

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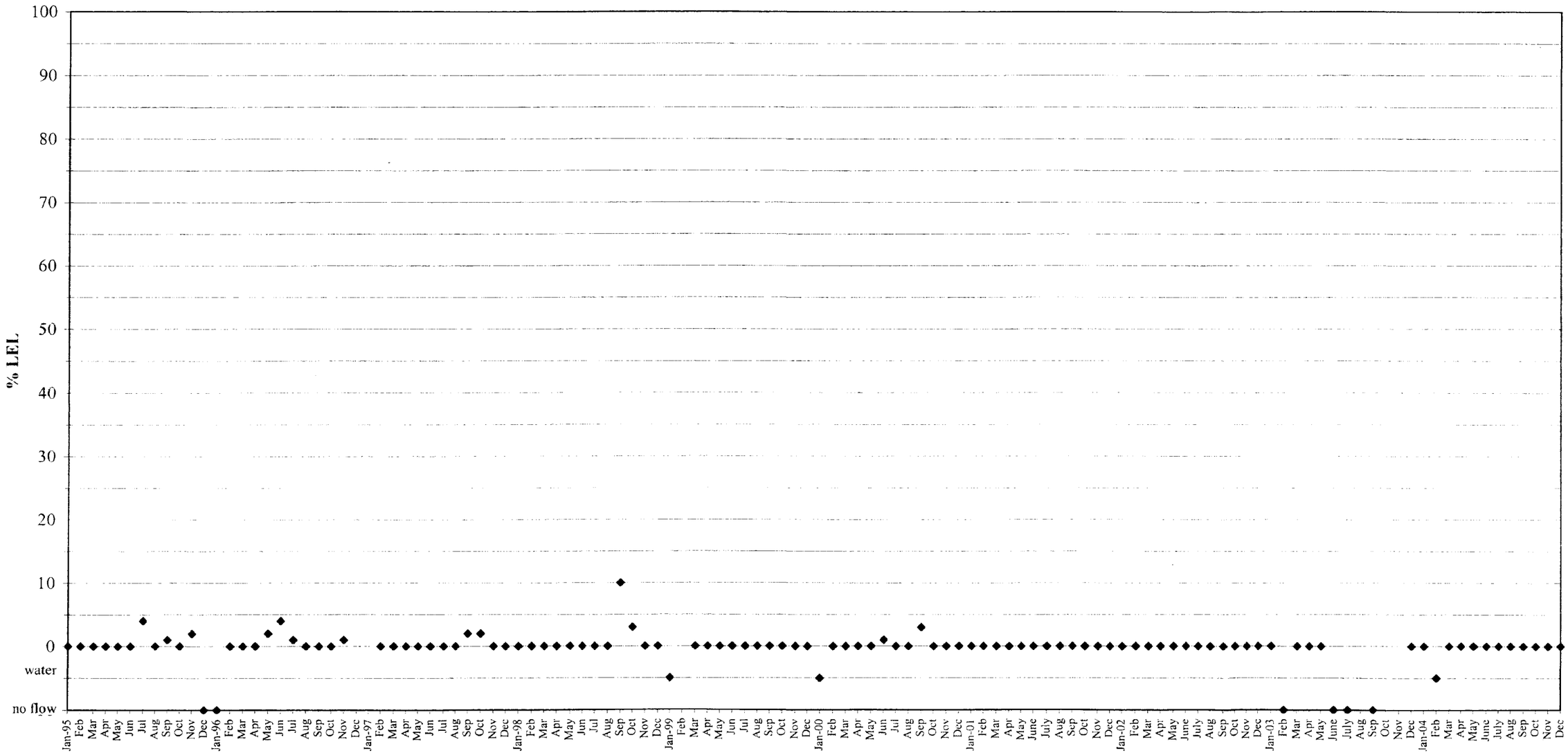

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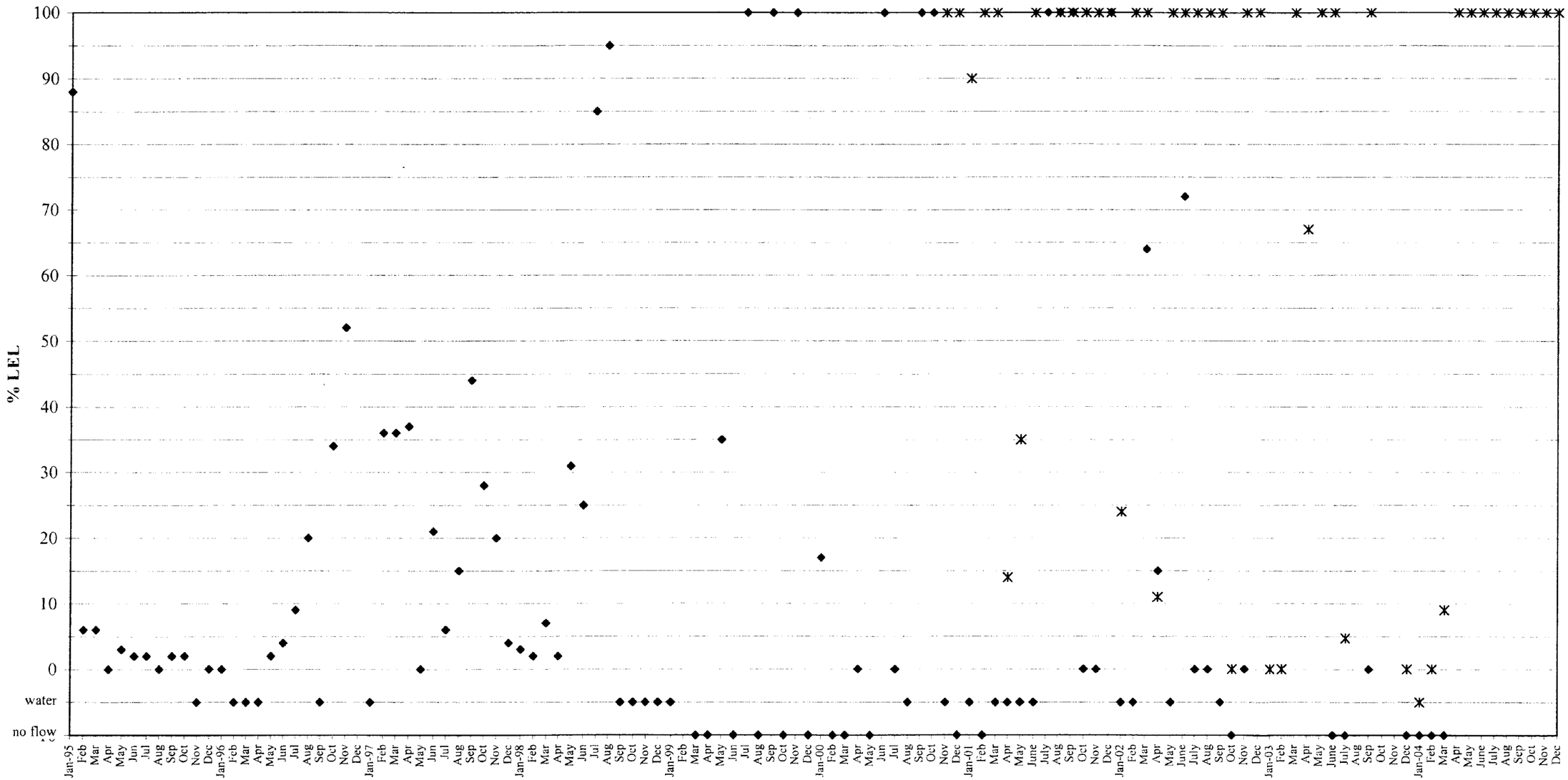
NP-1/PMP - 30



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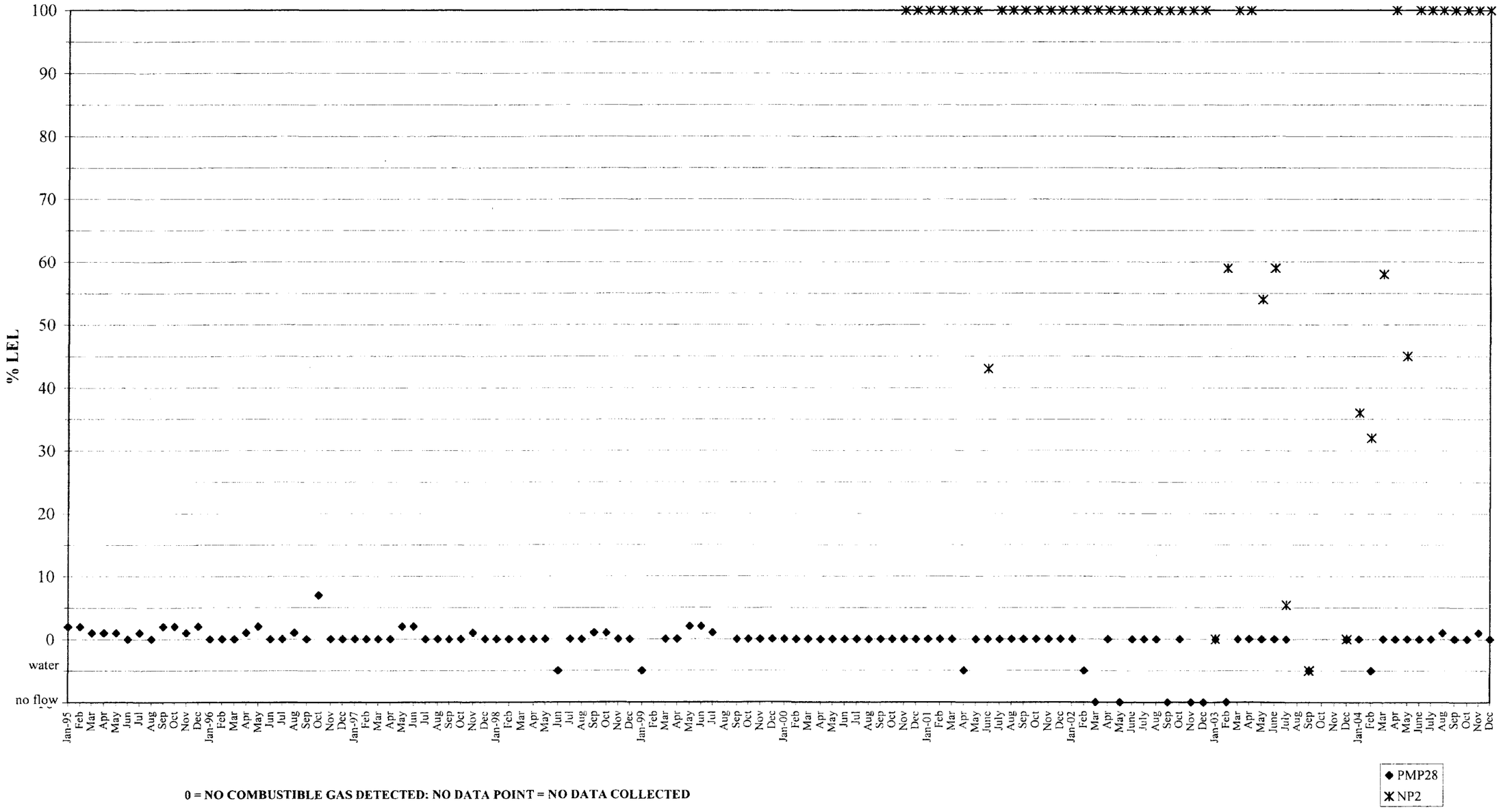
NP-2/PMP - 28



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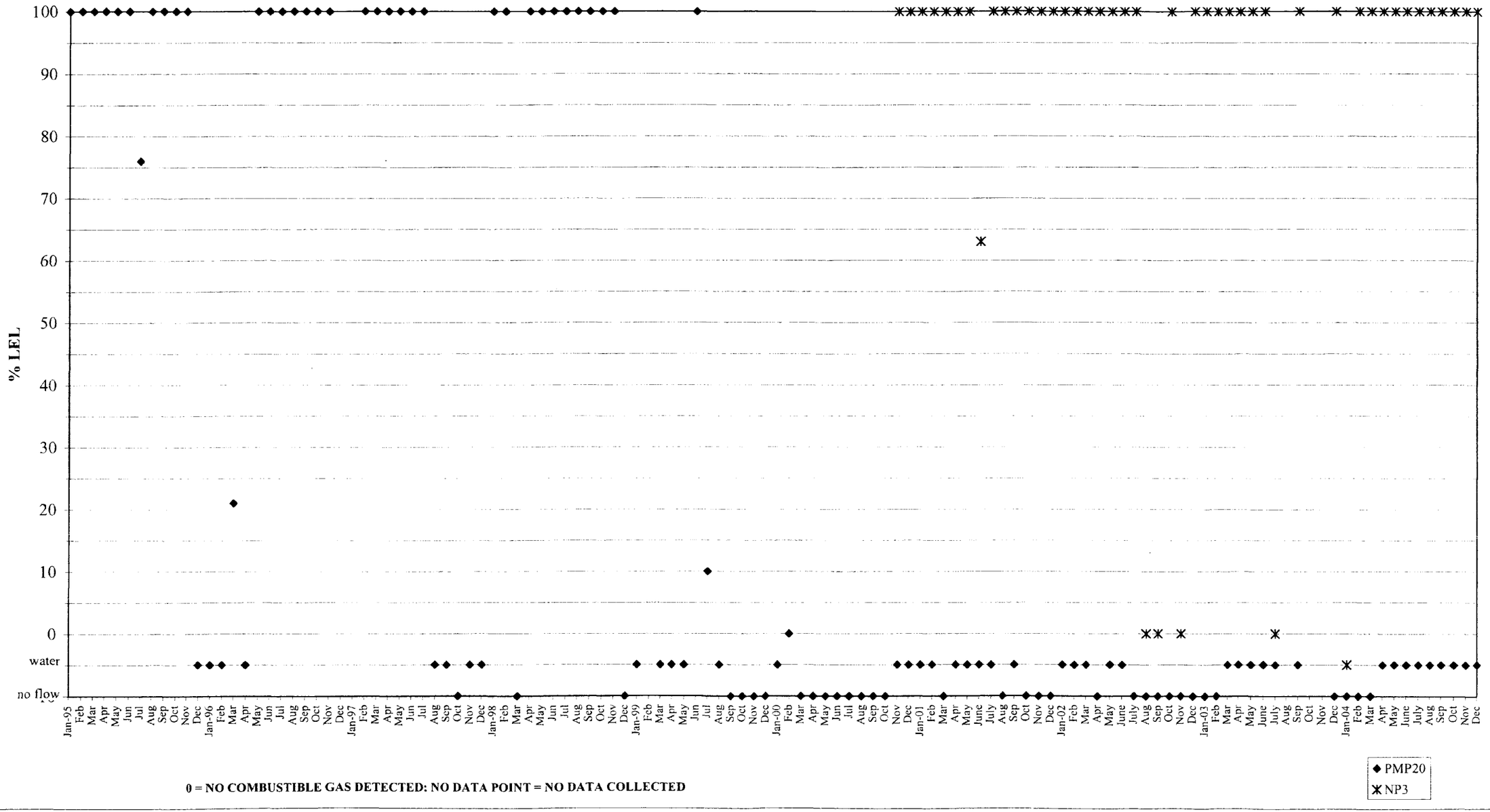

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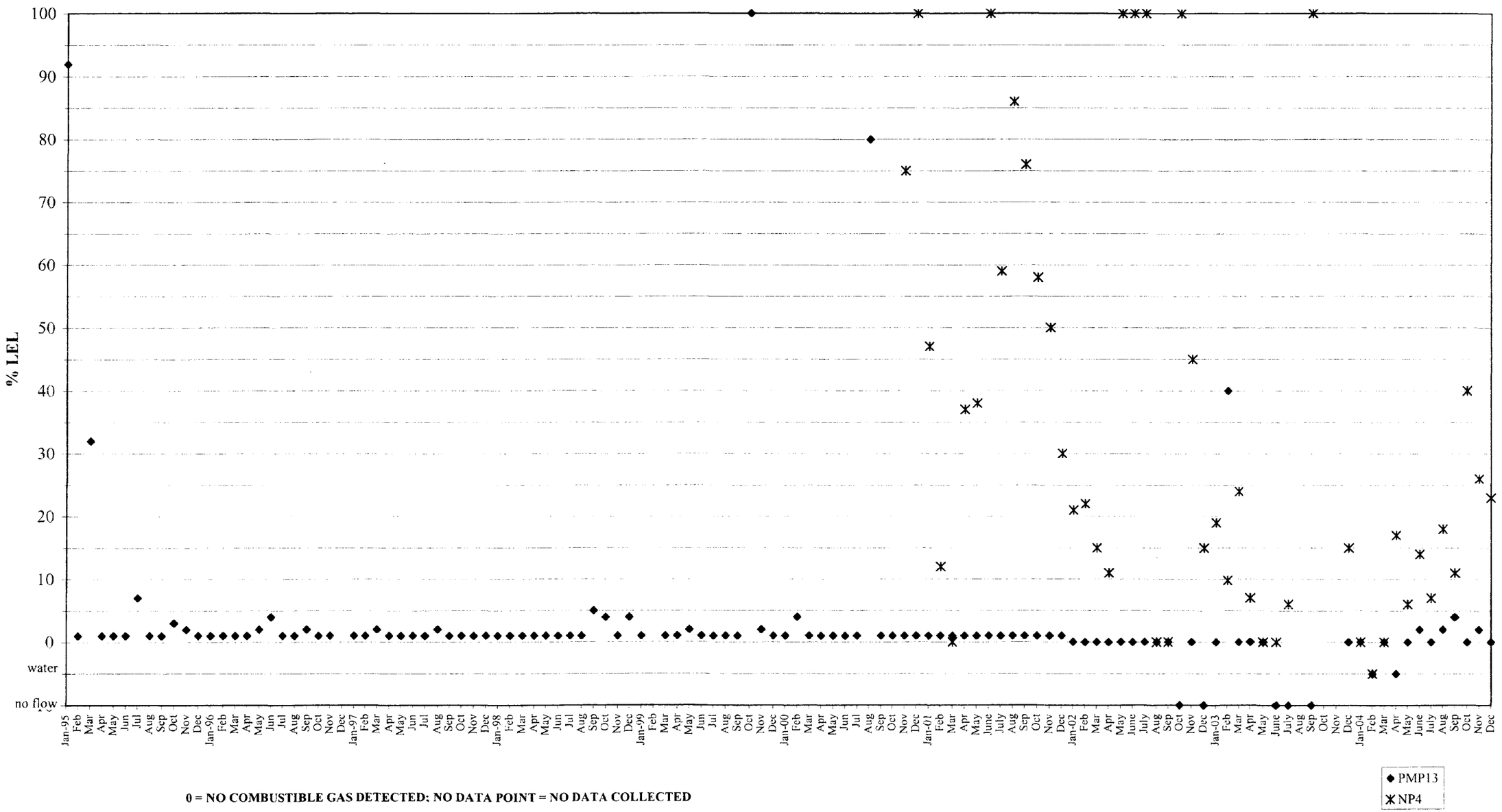

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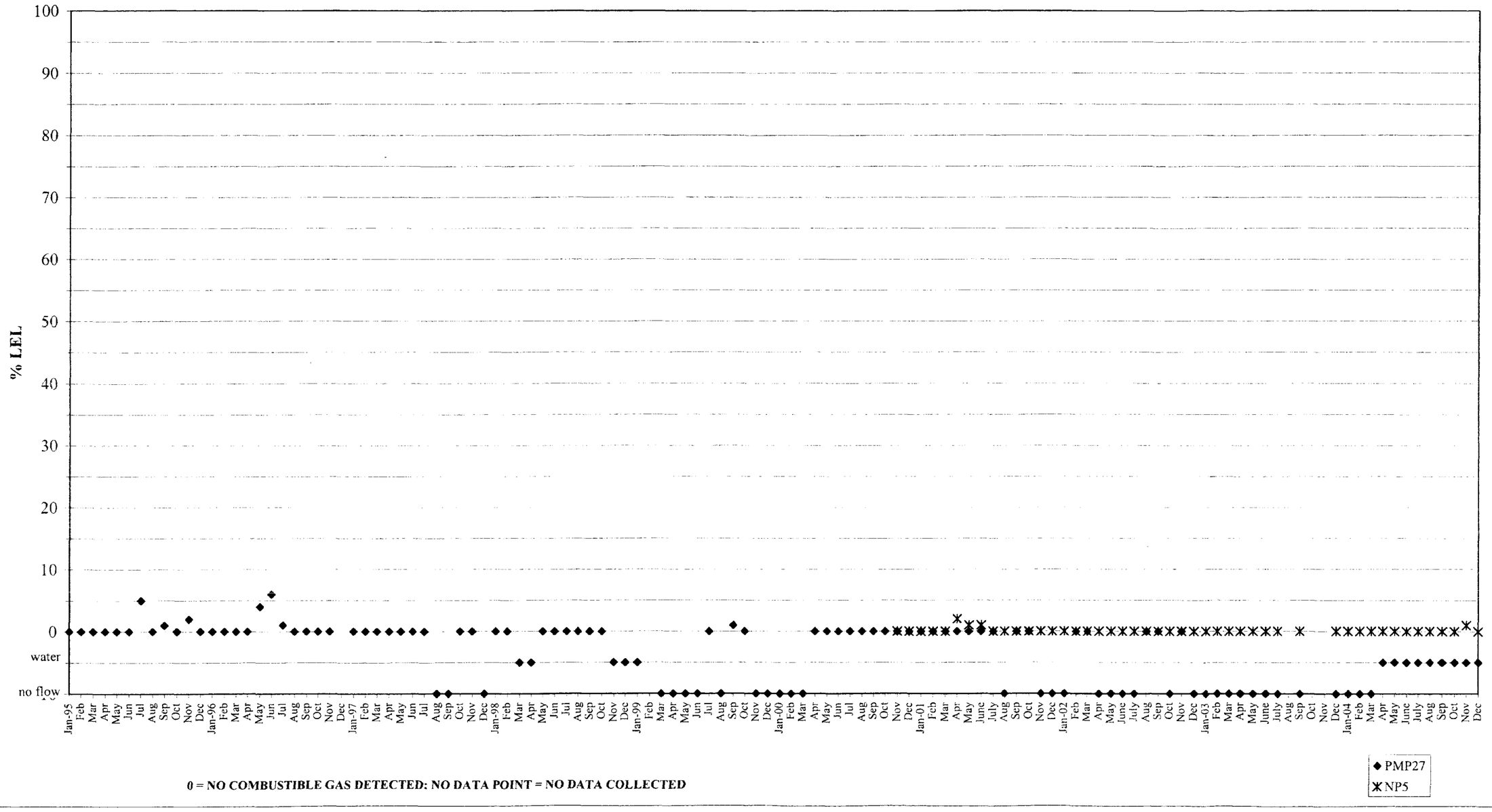

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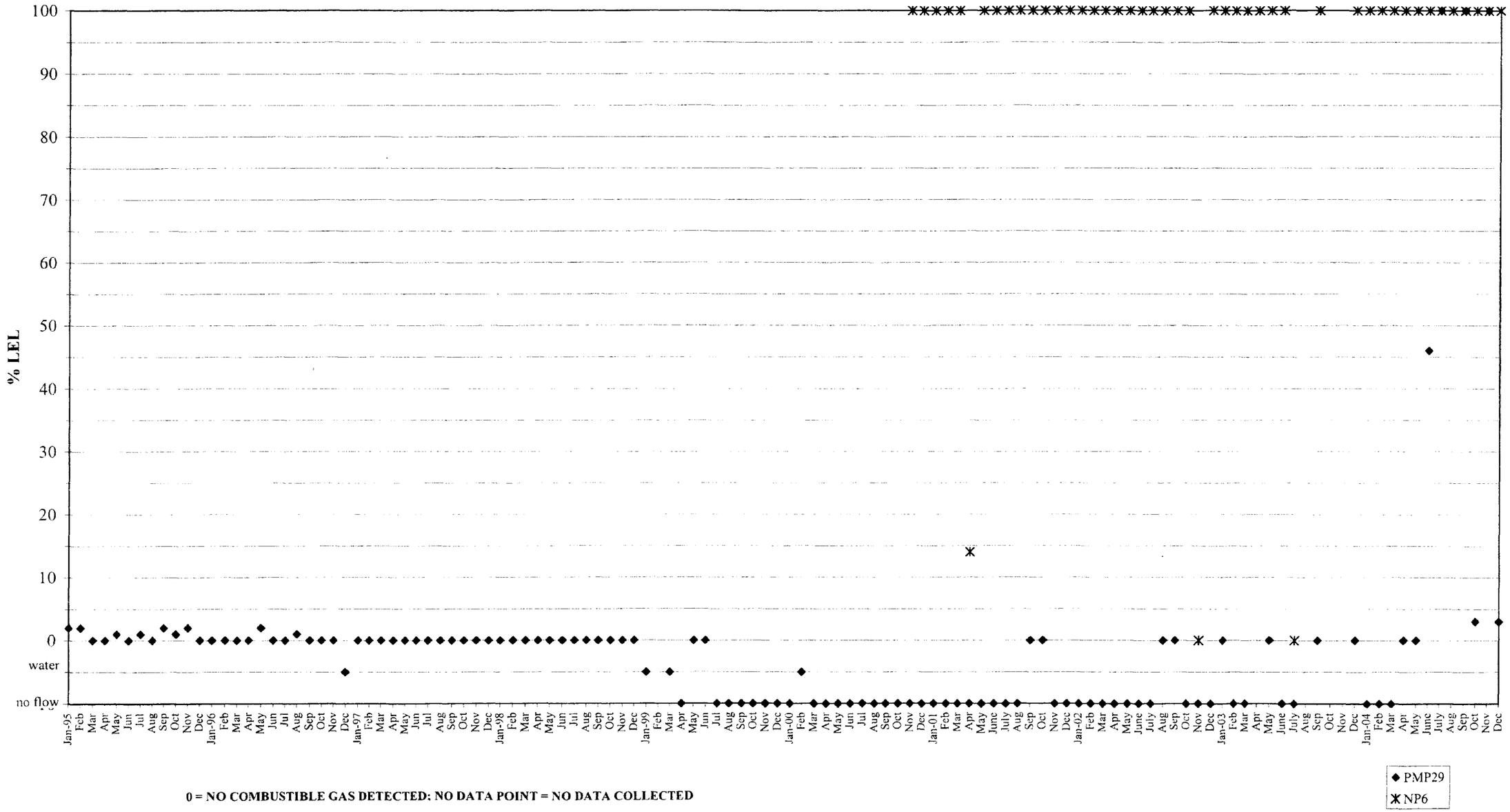

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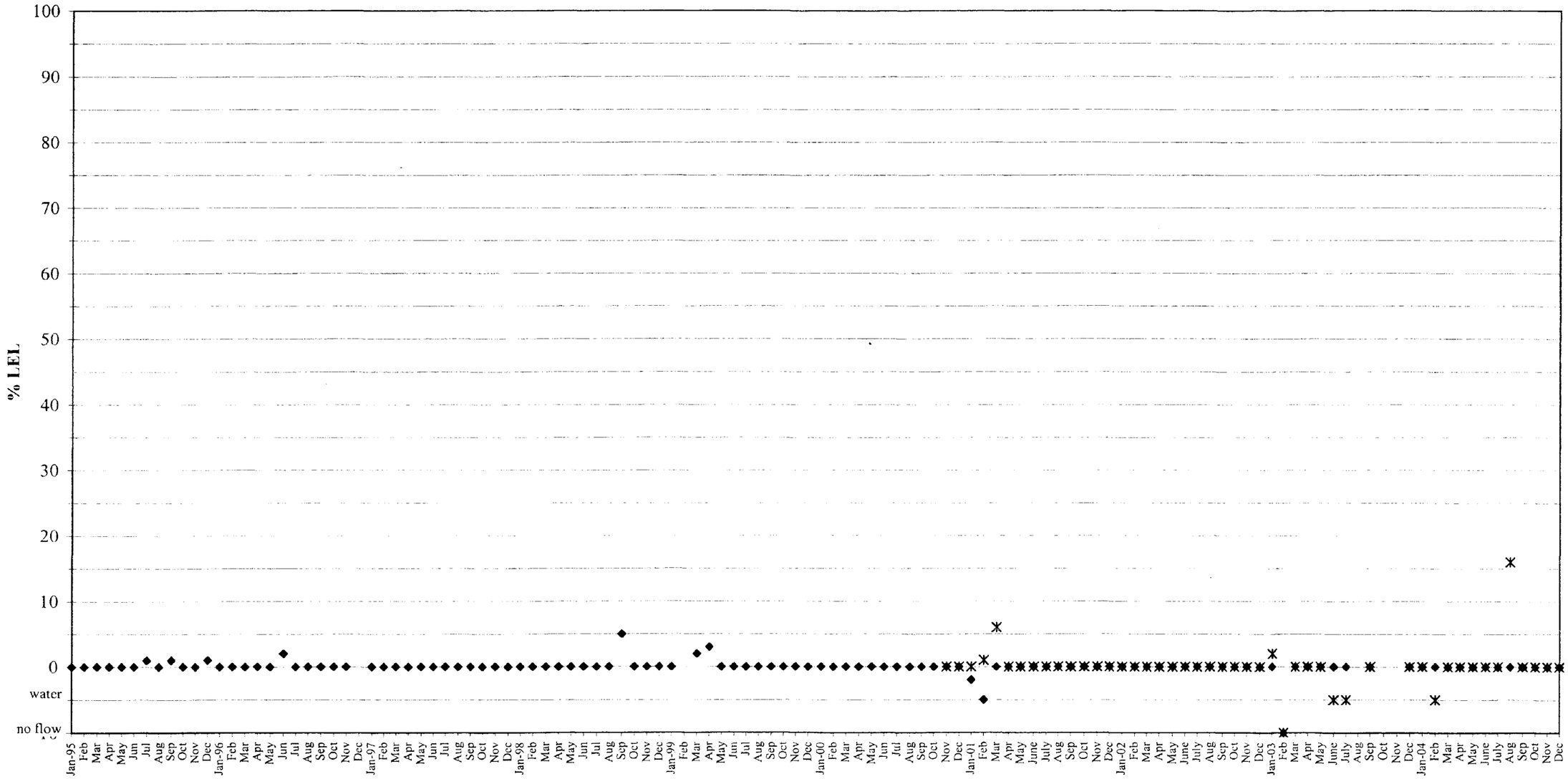

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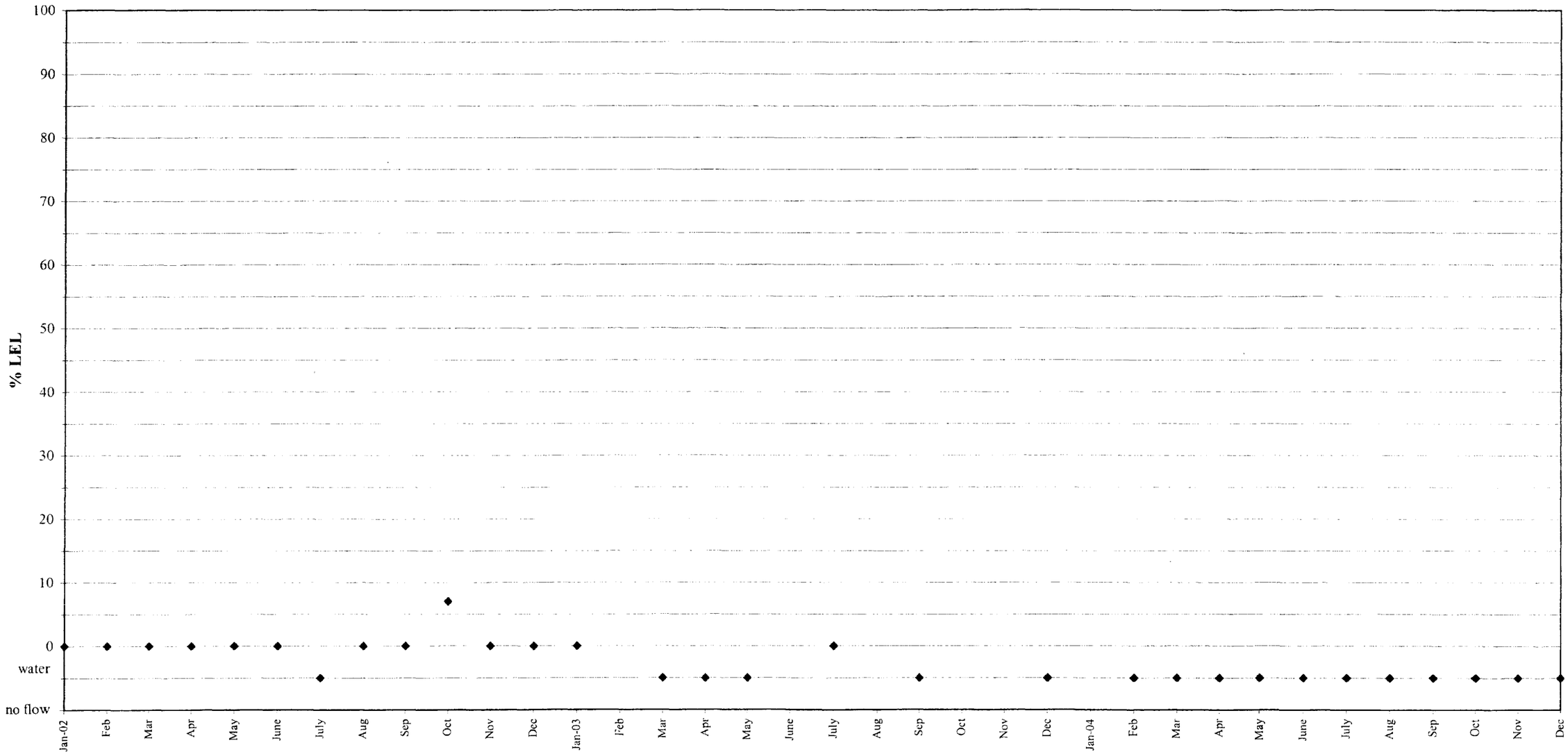
GP-1



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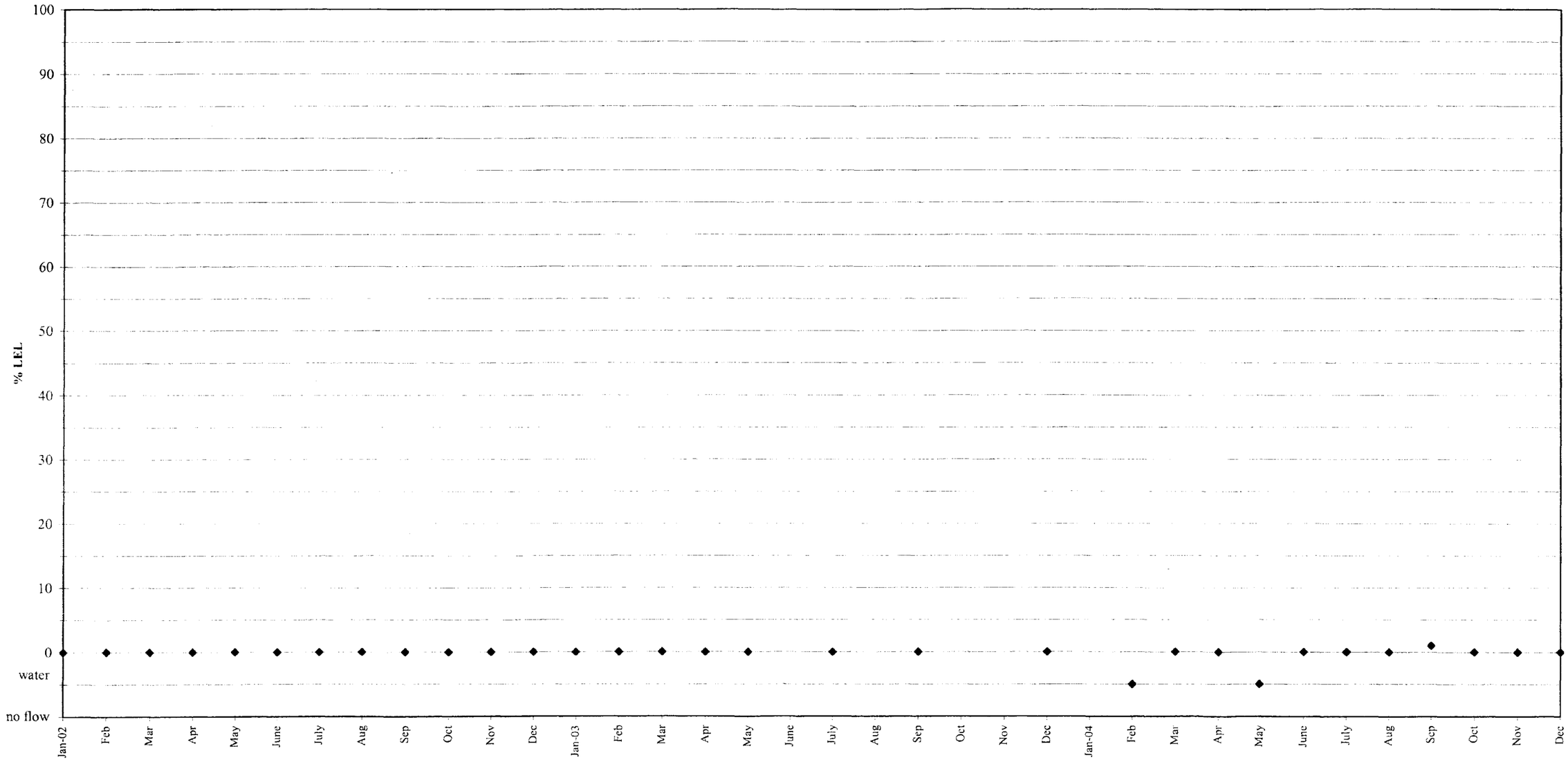
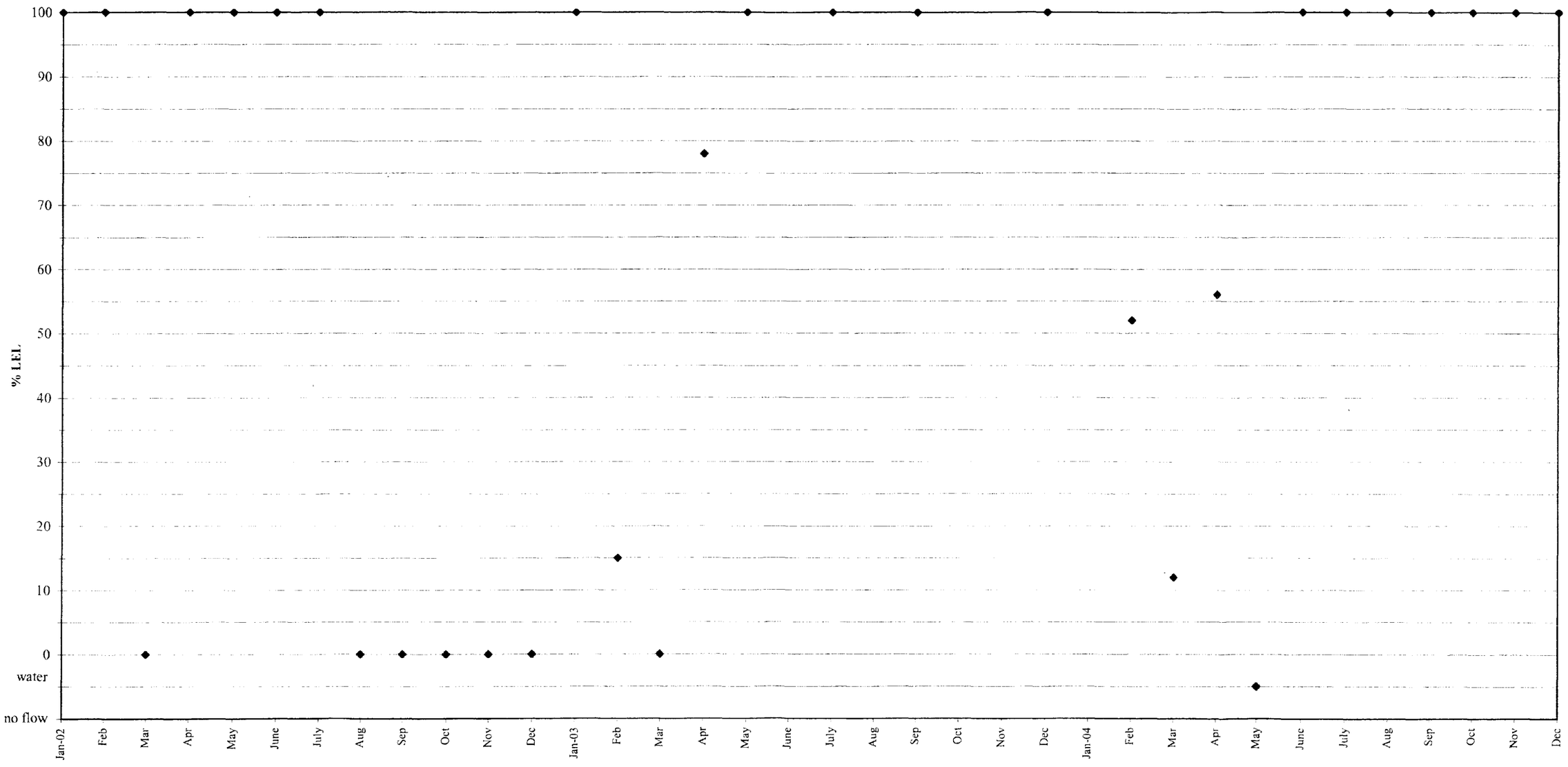
GP-2



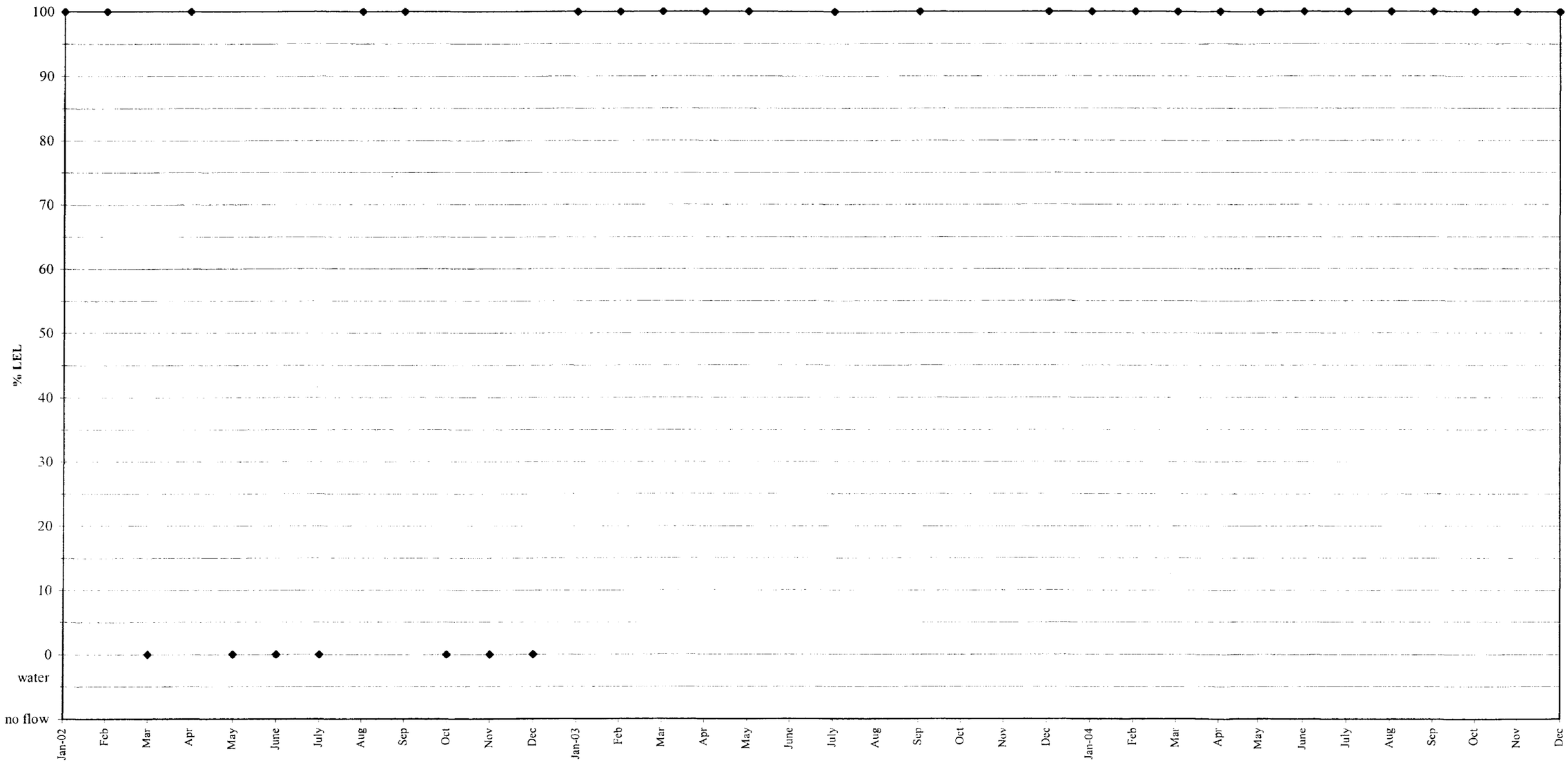
0 = NO COMBUSTIBLE GAS DETECTED; NO DATA POINT = NO DATA COLLECTED

GP-3



0 = NO COMBUSTIBLE GAS DETECTED; NO DATA POINT = NO DATA COLLECTED

GP-4



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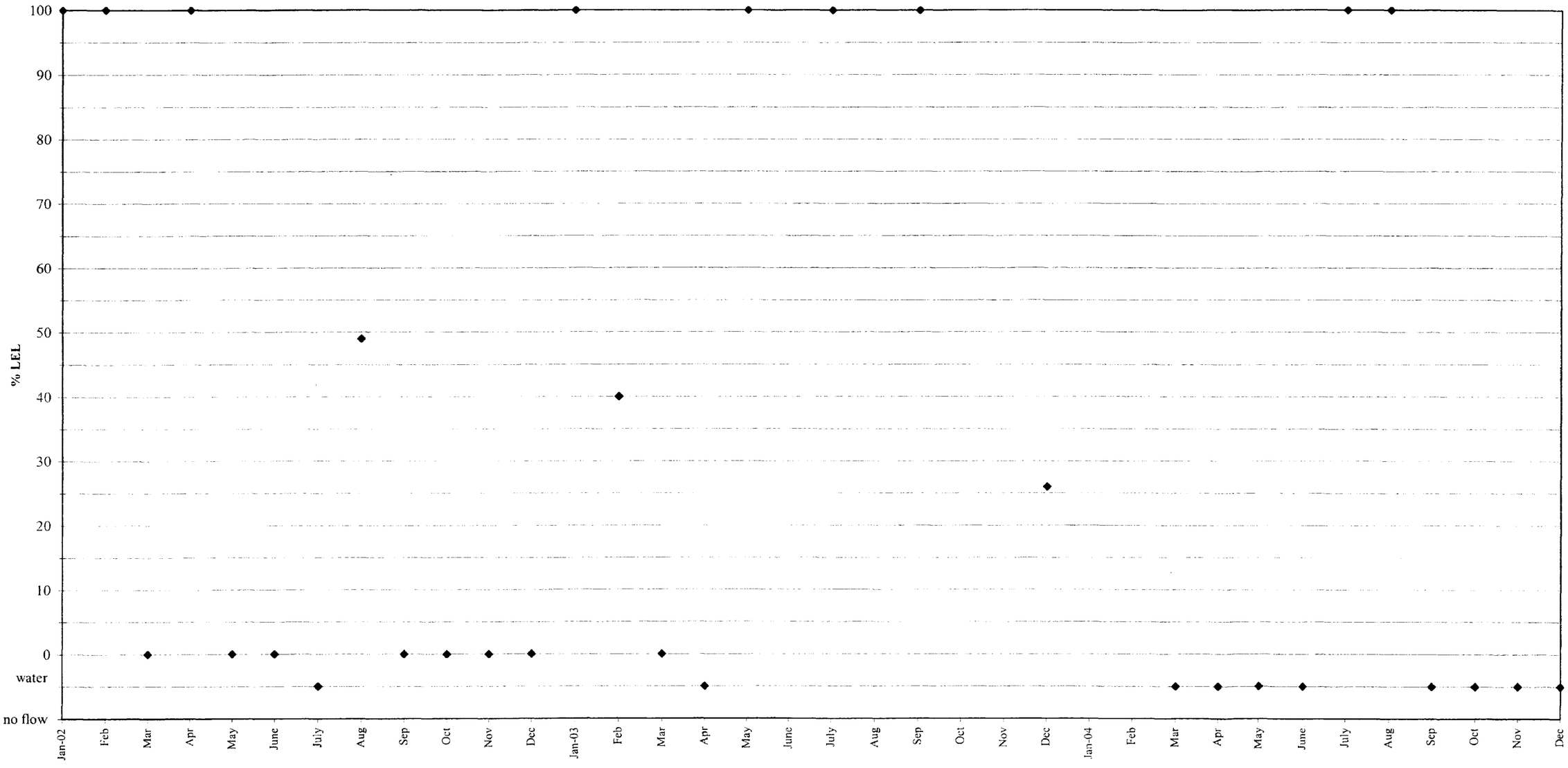
GP-5



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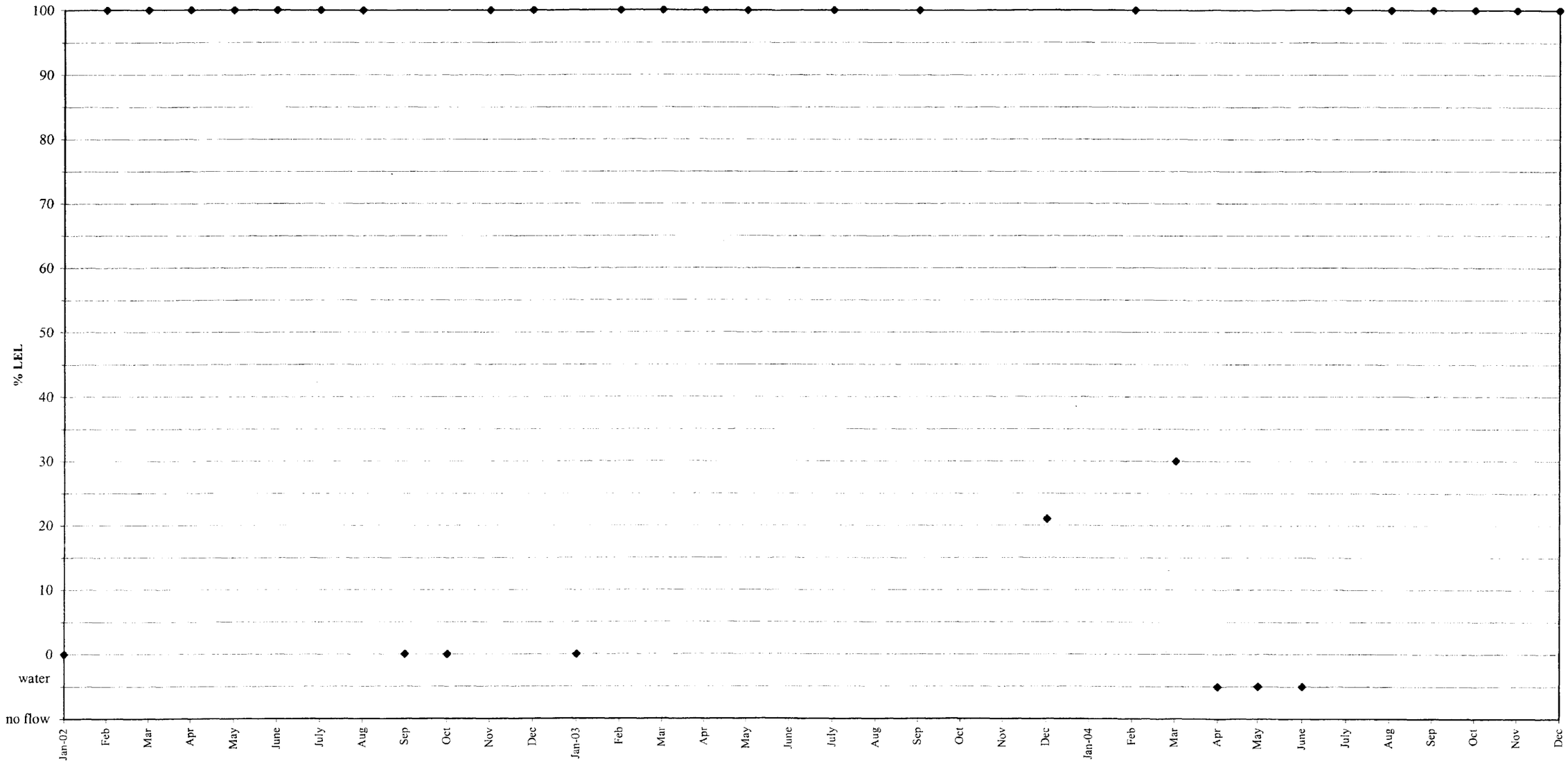
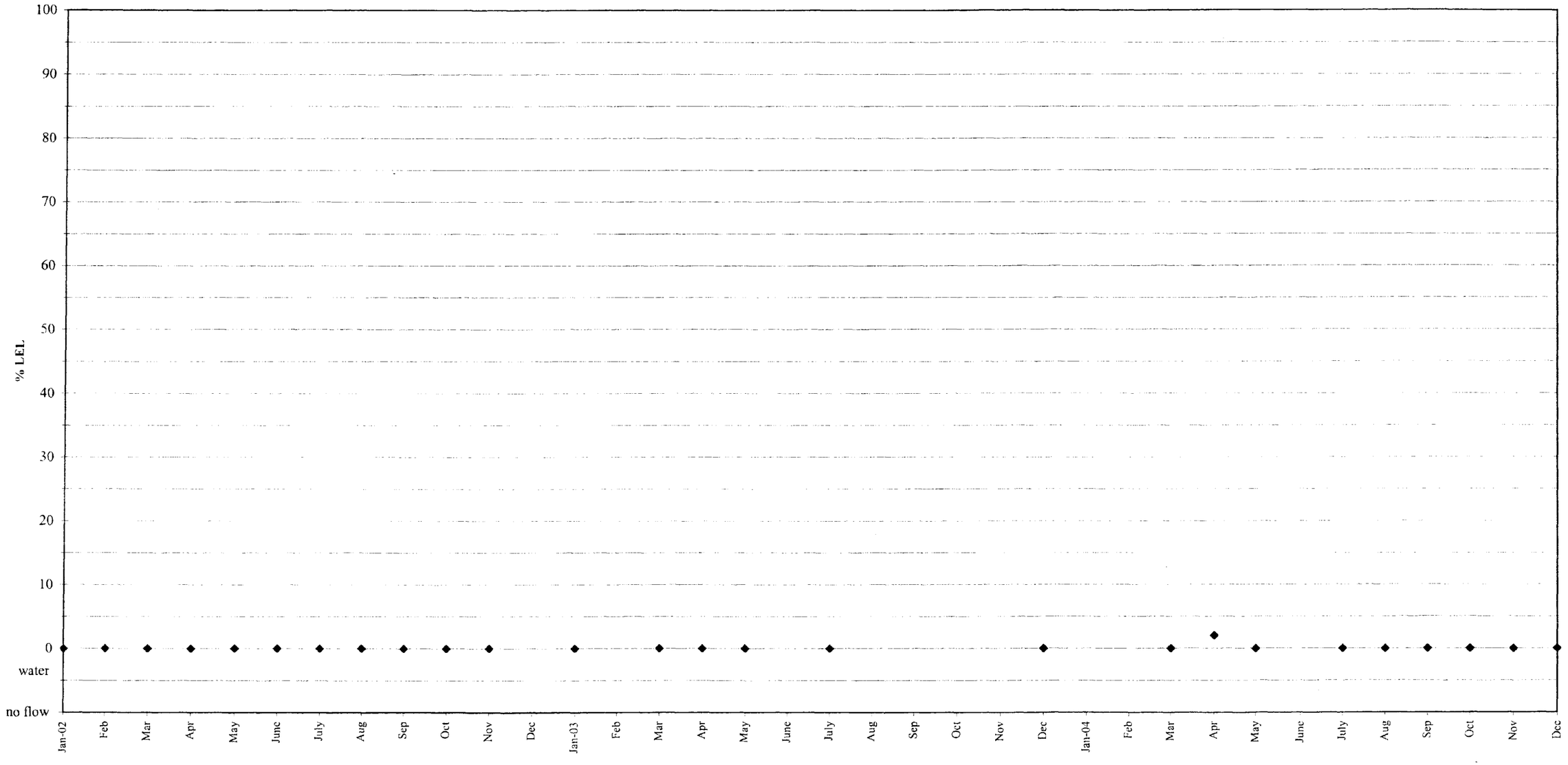
GP-6



0 = NO COMBUSTIBLE GAS DETECTED; NO DATA POINT = NO DATA COLLECTED

GP-7



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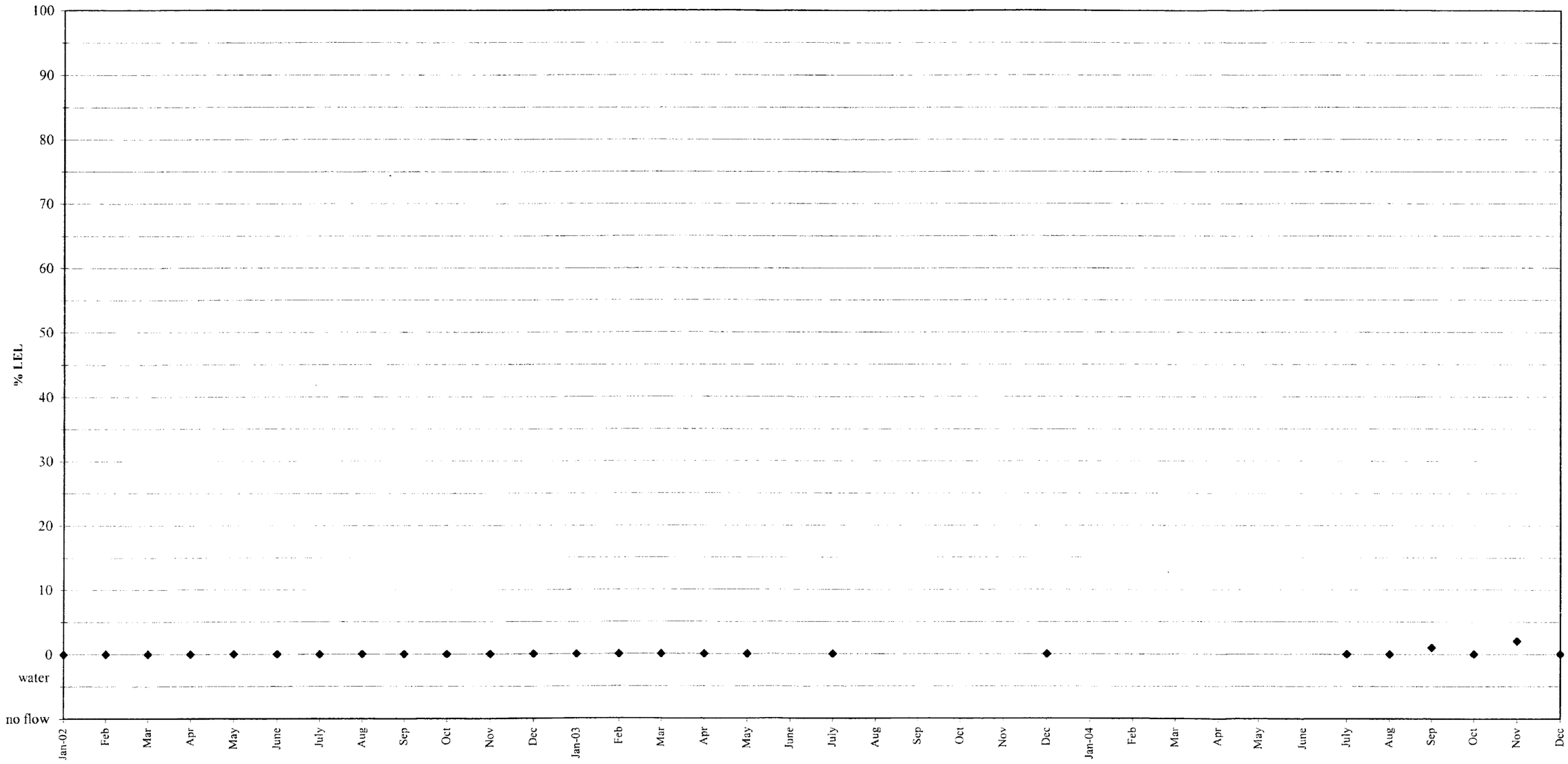
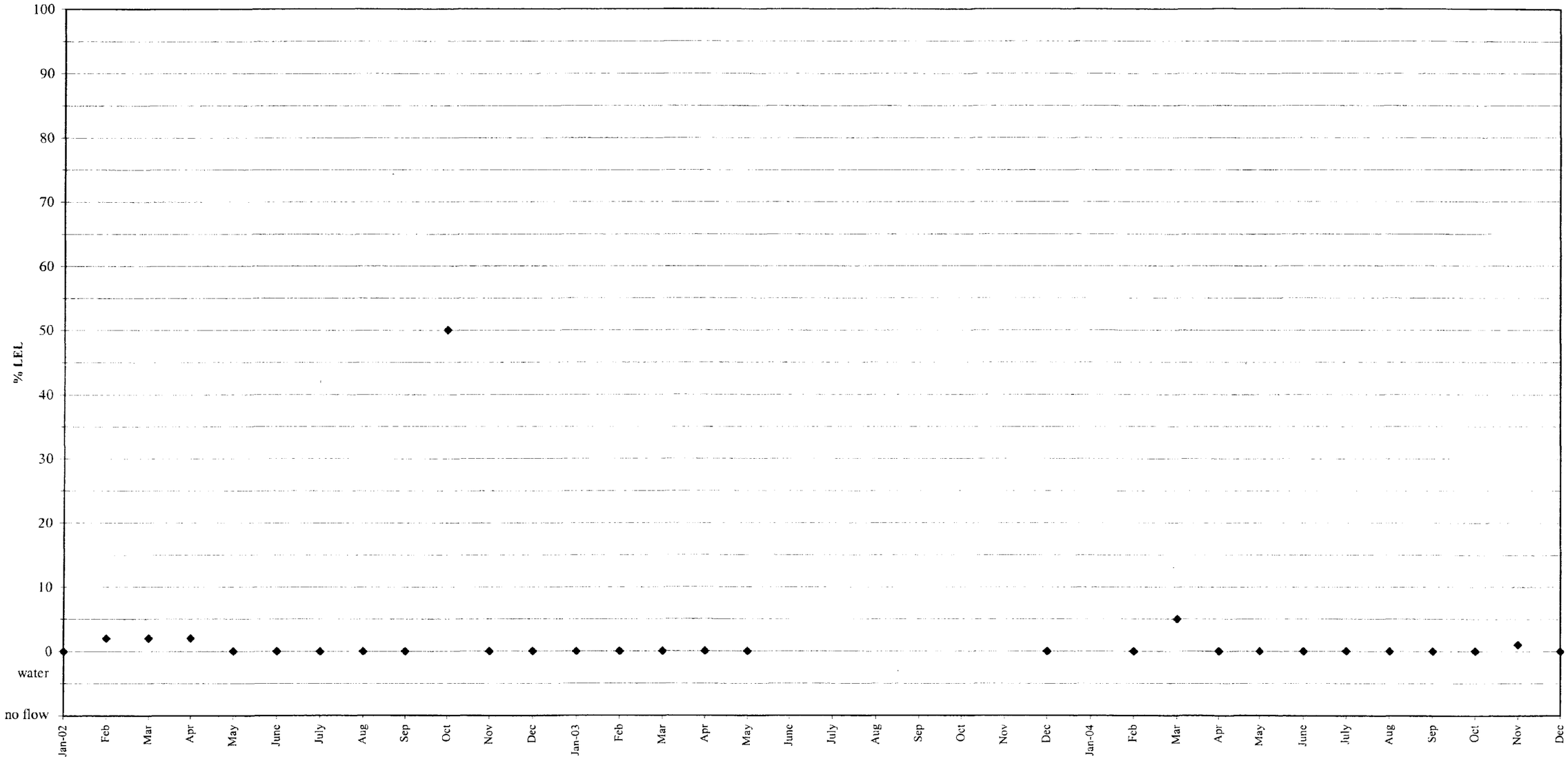
GP-9



0 = NO COMBUSTIBLE GAS DETECTED; NO DATA POINT = NO DATA COLLECTED

GP-10



0 = NO COMBUSTIBLE GAS DETECTED; NO DATA POINT = NO DATA COLLECTED